BW TRUSTS' MAY 22, 2006
RESPONSE TO CERCLA 104(e) INFORMATION REQUEST – NHOU

CONTINUED – VOLUME 2 OF 4

Exhibit H

EXHIBIT H

Request # 17 to Basinger Trusts and # 13 to Wagner Trusts:

Identify, and provide the following information for, all groundwater wells that are located at the Facility:

a. A map with the specific locations of the Facility groundwater wells;
b. Date the Facility groundwater wells were last sampled;
c. List of all constituents which were analyzed during groundwater sampling events; and
d. All groundwater sampling results, reports of findings, and analytical data.

BW Trusts' Response:

To the best of the BW Trusts' knowledge, there are no groundwater wells on the real property parcel owned by the BW Trusts.

Exhibit I

EXHIBIT I

Request # 21 to Basinger Trusts and # 16 to Wagner Trusts:

Provide copies of any applications for permits or permits received under any local, state, or federal environmental laws and regulations, including any waste discharge permits, such as national pollutant discharge elimination system permits.

BW Trusts Response:

The BW Trusts are passive owners of the real property on which Hawker Pacific Aerospace, its predecessors, and previous tenants have operated from 1966 to the present. The BW Trusts have not applied for and do not hold any permits under local, state or federal environmental laws and regulations.

The BW Trusts have limited knowledge regarding Hawker Pacific Aerospace's or such other tenants' operations on the parcel owned by the BW Trusts (or on the adjacent parcel that is also operated by Hawker Pacific Aerospace and is owned by Industrial Bowling Corp.). However, the BW Trusts expect that information responsive to the above requests will be submitted by Hawker Pacific Aerospace in response to EPA's information request to Hawker Pacific Aerospace.

Exhibit J

EXHIBIT J

Request # 22 to Basinger Trusts and # 17 to Wagner Trusts:

Provide a list of employees for each business that operated at the Facility who had knowledge of the use of hazardous substances and/or had knowledge of the disposal of wastes. For each person identified, please provide their last known address and telephone number.

BW Trusts' Response:

The BW Trusts are passive owners of the real property on which Hawker Pacific Aerospace, its predecessors, and previous tenants have operated from 1966 to the present. The BW Trusts have limited knowledge regarding Hawker Pacific Aerospace's or such other tenants' operations on the parcel owned by the BW Trusts (or on the adjacent parcel that is also operated by Hawker Pacific Aerospace and is owned by Industrial Bowling Corp.). However, the BW Trusts expect that information responsive to the above requests will be submitted by Hawker Pacific Aerospace in response to EPA's information request to Hawker Pacific Aerospace.

It is possible that information responsive to the above requests is contained in the various correspondence and reports attached in response to Request # 30, 31, 32 and 33 to the Basinger Trusts and # 23, 24 and 25 to the Wagner Trusts (*see* Exhibits L and M).

Exhibit K

EXHIBIT K

Request # 23, 24, 25, 26, 27, 28 and 29 to Basinger Trusts and # 18, 19. 20, 21 and 22 to Wagner Trusts:

If any of the various Basinger and Wagner trusts or Viola Basinger is aware of any waste streams that were discharged to the sewer at the Facility, provide copies of any permits and analyses performed on the discharged wastes.

For each waste stream generated at the Facility, describe the procedures for (a) collection, (b) storage, (c) treatment, (d) transport, and (e) disposal of the waste stream.

Please provide a detailed description of all pre-treatment procedures performed by the operators of the Facility prior to transport to a disposal site.

Please describe the method used by operators of the Facility to remove waste streams from sumps at the Facility.

Please identify all wastes that were stored at the Facility prior to shipment for disposal. Describe the storage procedures for each waste that was stored prior to disposal.

BW Trusts' Response:

The BW Trusts are passive owners of the real property on which Hawker Pacific Aerospace, its predecessors, and previous tenants have operated from 1966 to the present. The BW Trusts have limited knowledge regarding Hawker Pacific Aerospace's or such other tenants' operations on the parcel owned by the BW Trusts (or on the adjacent parcel that is also operated by Hawker Pacific Aerospace and is owned by Industrial Bowling Corp.). However, the BW Trusts expect that information responsive to the above requests will be submitted by Hawker Pacific Aerospace in response to EPA's information request to Hawker Pacific Aerospace.

It is possible that information responsive to the above requests is contained in the various correspondence and reports attached in response to Request # 16, 30, 31, 32 and 33 to the Basinger Trusts and # 12, 23, 24 and 25 to the Wagner Trusts (*see* Exhibits G, L and M).

Exhibit L

EXHIBIT L

Request # 30 to Basinger Trusts and # 23 to Wagner Trusts:

Please identify all leaks, spills, or other releases into the environment of any hazardous substances or pollutants or contaminants that have occurred at or from the Facility. In addition, identify and provide supporting documentation of:

a. The date each release occurred;
b. The cause of each release;
c. The amount of each hazardous substance, waste, or pollutant or contaminant released during each release;
d. Where each release occurred and what areas were impacted by the release; and
e. Any and all activities undertaken in response to each release, including the notification of any local, state, or federal government agencies about the release.

BW Trusts' Response:

Information responsive to the above requests is contained the in various reports and correspondence attached to this response. However, several other reports and/or correspondence referenced in the attached reports are not in the possession, custody or control of the BW Trusts. It is possible that such reports and correspondence will be submitted by Hawker Pacific Aerospace in response to EPA's information request to Hawker Pacific Aerospace.

The BW Trusts caution EPA that the information in the attached reports regarding the history of the ownership of and business operations on the 11310 Sherman Way parcel is, in many respects, incorrect. EPA should rely on the ownership information submitted by the BW Trusts for the period from May 12, 1966 to the present.

Additional information regarding the leasing history and operation of the Facility from May 1966 to the present will be submitted in June 2006 in response to Request # 2c, 2d, 2e, 3c, 3d and 3e to the Basinger Trusts and the Wagner Trusts and # 4c, 4d and 4e to the Basinger Trusts.

Finally, the date of installation and period of operation of the underground tank and sump are unknown, but pre-dated the Basingers' and Wagners' purchase of the property in May 1966. It appears that neither the Basingers nor the Wagners nor Hawker Pacific Aerospace were even aware of the existence of the tank and sump until the late 1980s. It is possible that the tank and sump were installed and/or operated by the pre-May 1966 property owner, Mustang Motor Products Corporation.

The following reports and correspondence are attached in response to the above requests:

1. 02/21/90 Letter from RWQCB to Hawker Pacific, Inc., Subsurface Investigation – Well Investigation Program (File No. AB104.0436).

2. 11/26/90 Report, Subsurface Soil Investigation, Sump and Underground Storage Tank Locations, 11310 Sherman Way, Sun Valley, California, Prepared for Hawker Pacific by Law Environmental, Project No. 58-0605.

3. 04/06/93 Report, Summary of Findings, Environmental Assessment Work, Hawker Pacific, 11310 Sherman Way, Sun Valley, California, Prepared for Gibson, Dunn & Crutcher (counsel to Hawker Pacific) by Law Crandall, Inc.

4. 04/22/94 Letter from Gibson, Dunn & Crutcher (counsel to Hawker Pacific) to U.S. EPA and U.S. DOJ, Re: San Fernando Valley Superfund Site, North Hollywood Operable Unit; Hawker Pacific Facility, 11310 Sherman Way, Sun Valley, California, with attached Declaration of Harry Gunn dated April 16, 1993.

5. 03/25/96 Report, Site Investigations: Evaluation of PCE Impacts to Shallow Soils at 11310 Sherman Way, Sun Valley, CA, Volume I: Report, Tables, Figures and Exhibits, and Volume II: Appendices, Prepared for Hawker Pacific, Inc. and Gordon and Peggy Wagner and Joseph Basinger, by Geraghty & Miller, Inc.

6. 06/14/96 Letter from RWQCB to Hawker Pacific Incorporated, Report Review – Hawker Pacific, Inc., 11310 Sherman Way, Sun Valley, CA (File No. 111.0436).

7. 11/00/96 Report, Phase II Site Investigation Report, Hawker Pacific, Inc. Facility, 11310 Sherman Way, Sun Valley, California 91352, Prepared for Aaron Rosen, Esq., by Geraghty & Miller, Inc.

8. 12/13/96 Letter from RWQCB to Aaron Rosen, No Further Requirements – Hawker Pacific, Inc., 11310 Sherman Way, Sun Valley, CA (File No. 111.0436).

L-1

STATE OF CALIFORNIA — GEORGE DEUKMEJIAN, Governor

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD—
LOS ANGELES REGION
101 CENTRE PLAZA DRIVE
MONTEREY PARK, CALIFORNIA 91754-2156
(213) 266-7500

February 21, 1990

Mr. Erik Johnson
HAWKER PACIFIC, INC.
11310 Sherman Way
Sun Valley, CA 91352

SUBSURFACE INVESTIGATION - WELL INVESTIGATION PROGRAM
(FILE NO. AB104.0436)

We have reviewed your consultant's, Law Environmental, Inc., report dated January 11, 1990, containing the results of additional subsurface investigation completed at your facility.

The reported analytical test results show that no volatile organic contaminants have been detected in any of the soil samples obtained from the area of your two private sewage disposal systems onsite. However, Toluene has been detected in the soil sample obtained at 35 ft below land surface in your industrial waste clarifier area. The presence of Toluene is problematic since Toluene was also detected in the laboratory blanks, although at lower levels than in the sample. The concentration of Toluene detected in the sample (4 µg/kg) is relatively low, however, and does not appear to pose a potential threat to ground water quality in the area.

Based on the above results, no further action is required on your part at this time with respect to this Agency's Well Investigation Program.

If you have any questions, please contact Ms. Mila P. Silvestre at (213) 266-7529.

David A. Bacharowski

DAVID A. BACHAROWSKI
Environmental Specialist IV

cc: Alisa Greene, U. S. EPA, Region IX
Bill Jones, L. A. County Dept. of Health Services
Warren Gross, Law Environmental, Inc.

L-2

LAW ENVIRONMENTAL

SUBSURFACE SOIL INVESTIGATION

SUMP AND UNDERGROUND STORAGE TANK LOCATIONS
11310 SHERMAN WAY
SUN VALLEY, CALIFORNIA

Prepared for

Hawker Pacific

November 26, 1990

Project No. 58-0605

LAW ENVIRONMENTAL, INC.

3320 N. SAN FERNANDO BLVD.
BURBANK, CALIFORNIA 91504
TEL. (818) 848-0214
FAX (818) 848-1674

November 26, 1990

Hawker Pacific
11310 Sherman Way
Sun Valley, CA 91352

Project No. 58-0605

Attention: Mr. Erik Johnson

Gentlemen:

We are pleased to present our report entitled "Subsurface Soil Investigation, Sump and Underground Storage Tank Locations, 11310 Sherman Way, Sun Valley, California". This report presents the results of our limited subsurface investigation conducted at the sump and underground storage tank locations in the alley between Buildings 1 and 2 at the above-referenced property. The investigation was authorized by Mr. Erik Johnson of Hawker Pacific on August 6, 1990 (your Purchase Order No. 32727).

We appreciate the opportunity to have worked with you on this project. If you have any questions or require further assistance, please do not hesitate to call us.

Respectfully submitted,

LAW ENVIRONMENTAL, INC.

Juli G. Oborne
Staff Environmental Geologist

Thomas M. Regan
Project Environmental Geologist

Glenn A. Brown, C.E.G. 3
Principal Geologist

JO/pr/0605.RPT
(3 copies submitted)

TABLE OF CONTENTS

Tables

TABLE OF CONTENTS
(continued)

SUBSURFACE SOIL INVESTIGATION

SUMP AND UNDERGROUND STORAGE TANK LOCATIONS

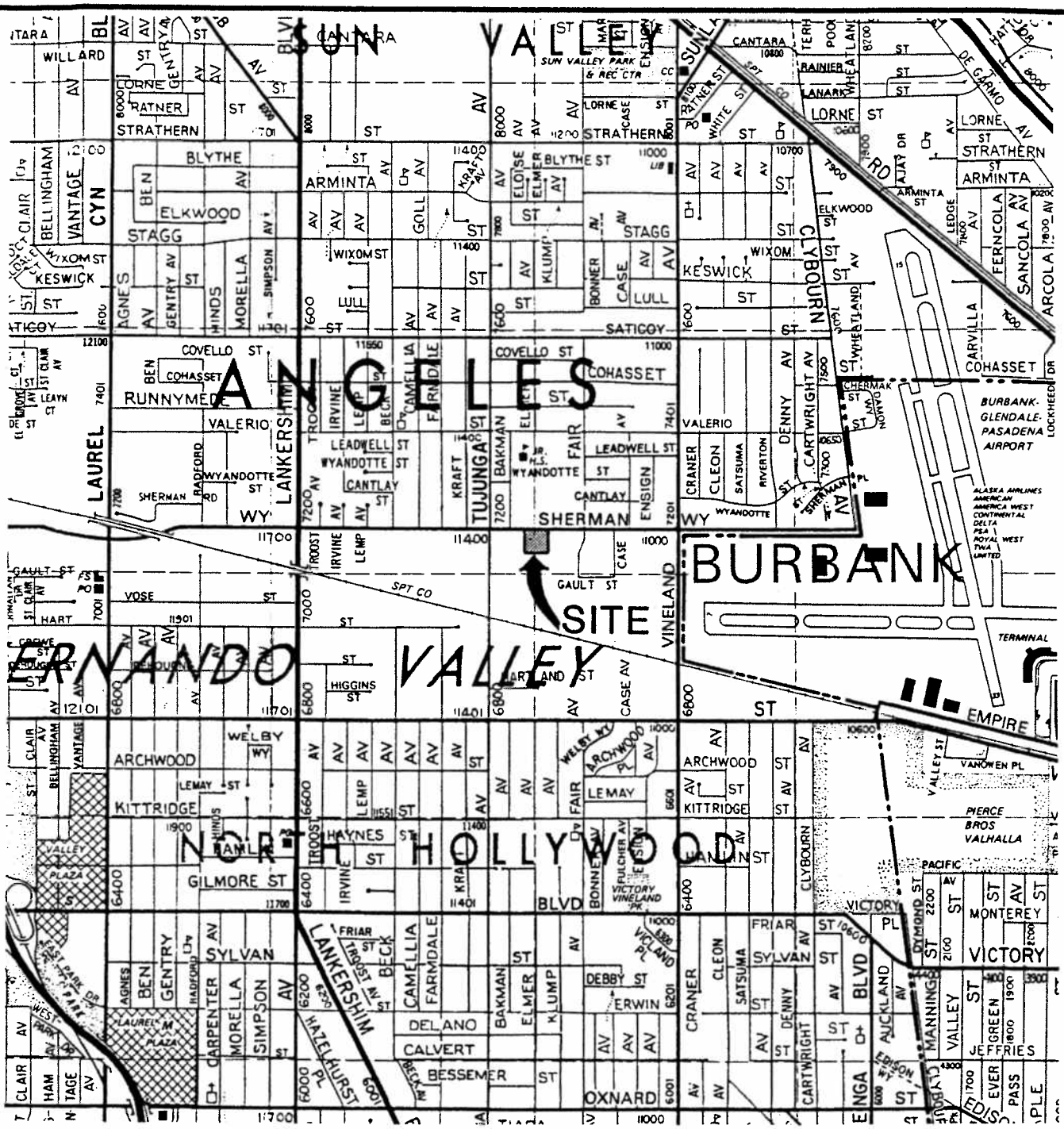
11310 SHERMAN WAY

SUN VALLEY, CALIFORNIA

INTRODUCTION

Law Environmental, Inc., (LAW) was retained by Hawker Pacific to perform a limited subsurface soil investigation in the alley located between Building 1 and Building 2 at 11310 Sherman Way in Sun Valley, California (Figure 1). This investigation was authorized by Mr. Erik Johnson on August 6, 1990 (your Purchase Order No. 32727).

Our professional services have been performed using the degree of care and skill ordinarily exercised, under similar circumstances, by reputable geologists practicing in this or similar localities. No other warranty, expressed or implied, is made as to the professional advice included in this report. This report has been prepared for Hawker Pacific and is directed towards complying with their specific needs. The report has not been prepared for use by other parties, and may not contain sufficient information for the purposes of other parties or other uses. Any use, interpretation, or emphasis other than that contained herein, is done at the reader's own risk.



PROJECT No. 58-0612 DATE 10/8/90 PROJ. MGR. J.D. DFTR. M.G.

HAWKER PACIFIC SAN FERNANDO VALLEY, CA.	LOCATION MAP	Proj. No. 58-0612 FIGURE 1 LAW ENVIRONMENTAL, INC.

BACKGROUND

A preliminary subsurface investigation was conducted at the site in June 1990 (Active Leak Testing, Inc. [ALT], Hawker Pacific), to determine the presence of contamination from a small (approximately 200 gallon) underground storage tank. A geophysical survey at the site was conducted by Spectrum E.S.I. in August 1990. The survey indicated that the tank was four feet in length, four feet in diameter, and at one time contained waste oil. The tank was located within a concrete containment area at the west end of the alley. A sump, one foot by one foot by three feet deep, was discovered during this investigation.

During the ALT investigation, three borings (B-1, B-2 and B-3) were drilled in the area of the underground storage tank and the sump. Borings B-1 and B-2, located adjacent to the underground storage tank, were slant-drilled and completed to a depth of 20 feet. Boring B-3, located adjacent to the sump, was slant-drilled to a depth of 15 feet. All samples were tested for total recoverable hydrocarbons (EPA Method 418.1) and one sample (Boring B-3 at five feet) was analyzed for purgeable organics (EPA Method 8240). Table 1 presents the analytical laboratory results of the soil samples.

TABLE 1

RESULTS OF LABORATORY ANALYSES OF SOIL SAMPLES
FOR TOTAL RECOVERABLE HYDROCARBONS AND PURGEABLE ORGANICS
FROM ALT REPORT, JUNE 1990

SAMPLE NUMBER AND DEPTH	TRH (ppm)	1,1,1-TCA (ppb)	TCE (ppb)	TOLUENE (ppb)	PCE (ppb)	TOTAL XYLENES (ppb)
B-1 @ 15'	36.3	NT	NT	NT	NT	NT
B-1 @ 20'	36.3	NT	NT	NT	NT	NT
B-2 @ 15'	220	NT	NT	NT	NT	NT
B-2 @ 20'	136	NT	NT	NT	NT	NT
B-3 @ 1'	38,637	NT	NT	NT	NT	NT
B-3 @ 3'	22,251	NT	NT	NT	NT	NT
B-3 @ 5'	3,245	6.6	19.2	550,000	555,000	584
B-3 @ 10'	17,104	NT	NT	NT	NT	NT
B-3 @ 15'	354	NT	NT	NT	NT	NT

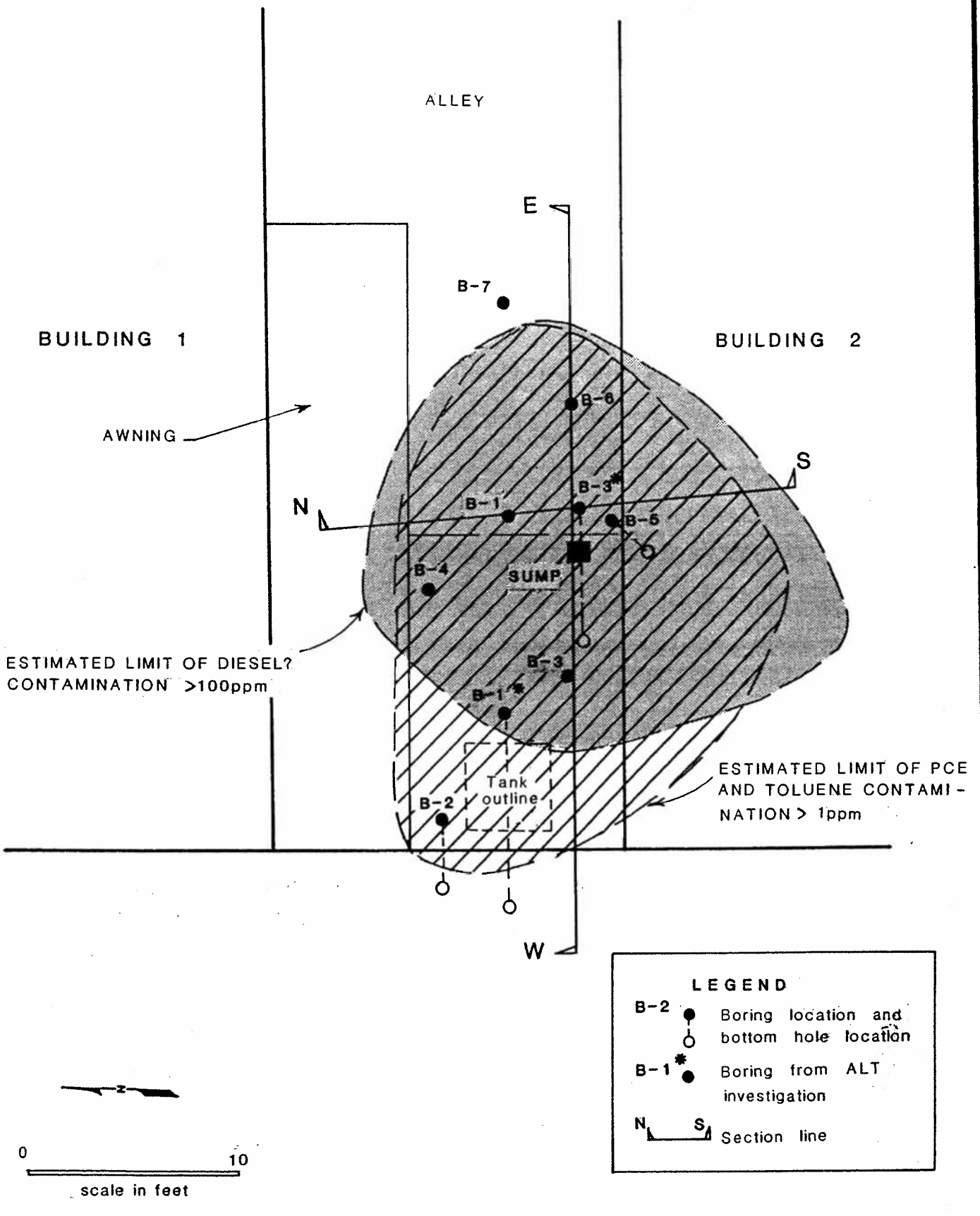
TRH = Total Recoverable Hydrocarbons
1,1,1-TCA = 1,1,1-Trichloroethane
TCE = Trichloroethene
PCE = Tetrachloroethene
NT = Not Tested

PURPOSE

The purpose of the current investigation was to delineate the vertical and horizontal extent of contamination that occurred as a result of the discharge from the underground storage tank and/or the sump.

SCOPE OF INVESTIGATION

Seven soil borings were drilled in the alley as shown on Figure 2. One boring (B-1) was drilled to 80 feet, one (B-2) to 40 feet, one (B-5) to 25 feet, and four borings (B-3, B-4, B-6, and B-7) were drilled to a depth of 20 feet. Undisturbed soil samples were



PROJECT No. 58-0605 DATE 10/9/90 PROJ. MGR. J.O. DFTR. M.G.

HAWKER PACIFIC SUN VALLEY, CALIFORNIA	SITE PLAN	Proj. No. FIGURE 2

LAW ENVIRONMENTAL, INC.

collected at 5-foot intervals in all borings. Based on field observations, selected soil samples were submitted to Curtis and Tompkins, Ltd. of Los Angeles, California, a state-certified analytical laboratory. The selected samples were analyzed for total extractable petroleum hydrocarbons (EPA Method 8015, Modified) and volatile organics (EPA Method 8240).

SUBSURFACE INVESTIGATIVE METHODS

Field work was conducted from August 28 through August 31, 1990. Seven soil borings, designated B-1 through B-7 were drilled in the alley (Figure 2). All work was performed in accordance with a site-specific Health and Safety Plan (Appendix A). Soil samples were obtained according to procedures outlined in Appendix B, Soil Sampling Protocol. The sampling equipment was thoroughly washed and rinsed prior to and during sampling. The soil samples were obtained by driving a split-spoon California sampler into the soil ahead of the augers. A soil sample from each sample interval was screened using an organic vapor analyzer (Foxboro OVA 108 GC) and Gastechtor 1238 to quantify organic vapor concentrations and combustible gas concentrations, respectively. Samples were collected in brass tubes, capped with Teflon® liners and tight-fitting plastic lids, and secured with vinyl tape. The samples were labeled and placed in an ice-filled cooler until delivery to the laboratory.

All findings and conclusions derived from measurements and/or analyses of soil, water, air and/or gas are based on the conditions which existed only at those particular sample locations and the times of sampling. The analytical results reflect the range of accuracy and detection levels, when specified, for the particular analytical equipment and/or specific analytical method(s) used.

Drilling was conducted by Layne Environmental Services, formerly Datum Exploration of Long Beach, California using B-53 and CME75 truck-mounted, hollow-stem auger drilling rigs and a SIMCO golf cart-mounted, hollow-stem drilling rig. Boring B-1 was completed to a depth of 80 feet. Boring B-2 was slant-drilled five degrees from vertical in a westward direction to a depth of 40 feet. Boring B-5 was slant-drilled five degrees from vertical in a southwest direction to a depth of 25 feet. Borings B-3, B-4, B-6, and B-7 were drilled to depths of 20 feet. Soil samples were collected from all borings at 5-foot intervals. All borings were backfilled with soil and patched with concrete or capped with the concrete plug that was cut for the boring.

FINDINGS

Field Observations

A thin layer of fill exists beneath the site. The fill soils consist of brown, medium to coarse-grained sand. Alluvial soil was

encountered in all borings. The alluvium consists generally of medium to very coarse-grained sand with gravel up to two inches in diameter and minor lenses of silty sand with gravel. Gravel lenses were encountered in Boring B-1 at depth which made drilling below 70 feet very difficult. Ground water was not encountered in any of the borings.

Conspicuous solvent odors were detected in drill cuttings from Borings B-1, B-3 and B-5. No visual evidence of contamination was noted in the drill cuttings. A Gastechtor 1238 was used to monitor combustible gases in the samples from Boring B-1. The values ranged from 450 parts per million ([ppm], relative to hexane) at 49 feet, to 240 parts per million (ppm) at 69 feet. The Foxboro 108 GC OVA was used to screen samples in all other borings. Organic vapor concentrations in Boring B-3 ranged from 75 ppm to 5 ppm (relative to methane), and in Boring B-5 from 44 ppm to 1 ppm (relative to methane). All boring logs are included in Appendix C.

OVA and Gastechtor readings were used as a relative indicator of the volatile organic compound content (including methane) of the soil in order to aid in the selection of samples for laboratory analyses. All equipment readings are included on the boring logs.

Analytical Results

Analytical reports containing the results of testing of soil samples are included in Appendix D. Chain-of-Custody and QA/QC documentation are also included in Appendix D. Tables 2 and 3 present the analytical data obtained from testing 18 soil samples for extractable petroleum hydrocarbons by U.S. EPA Method 8015 (Modified) and purgeable organics by U.S. EPA Method 8240, respectively.

TABLE 2

RESULTS OF LABORATORY ANALYSES OF SOIL SAMPLES FOR EXTRACTABLE PETROLEUM HYDROCARBONS BY MODIFIED U.S. EPA METHOD 8015

BORING NO.	DEPTH (in feet)	CONCENTRATION (in ppm)		
		GASOLINE	KEROSENE	DIESEL
B-1	9	ND <.5	NR	NR
	29	ND <.5	NR	NR
	49	ND <.5	NR	NR
	69	ND <.5	NR	NR
	74	ND <10	ND <10	ND <10
B-2	5	ND <10	ND <10	ND <10
	20	ND <10	ND <10	ND <10
	30	ND <10	ND <10	ND <10
	40	ND <10	ND <10	ND <10
B-3	10	ND <10	ND <10	ND <10
	20	ND <10	ND <10	ND <10
B-4	5	ND <10	ND <10	110*
	20	ND <10	ND <10	ND <10
B-5	5	ND <50	ND <50	7,300*
	20	ND <10	ND <10	88*
B-6	20	ND <10	ND <10	ND <10
B-7	5	ND <10	ND <10	ND <10
	20	ND <10	ND <10	ND <10

ND<10 = Not detected, detection limit noted
NR = Not reported
* Hydrocarbons in diesel range, did not match standards

TABLE 3

RESULTS OF LABORATORY ANALYSES OF SOIL SAMPLES
FOR PURGEABLE ORGANICS
BY U.S. EPA METHOD 8240

SAMPLE NUMBER AND DEPTH	CONCENTRATION (in ppb)					
	PCE	TOLUENE	TCE	1,1,1-TCA	1,1-DCE	1,1-DCA
B-1 @ 9'	ND <5	TR ≈4	ND <5	ND <5	ND <5	ND <5
B-1 @ 29'	ND <5	8	ND <5	ND <5	ND <5	ND <5
B-1 @ 49'	ND <5	5	ND <5	ND <5	ND <5	ND <5
B-1 @ 69'	ND <5	8	ND <5	ND <5	ND <5	ND <5
B-1 @ 74'	ND <5	TR ≈4	ND <5	ND <5	ND <5	ND <5
B-2 @ 5'	450	70	ND <5	ND <5	ND <5	ND <5
B-2 @ 20'	42	18	ND <5	ND <5	ND <5	ND <5
B-2 @ 30'	7	10	ND <5	ND <5	ND <5	ND <5
B-2 @ 40'	ND <5	TR ≈4	ND <5	ND <5	ND <5	ND <5
B-3 @ 10'	21	18	ND <5	ND <5	ND <5	ND <5
B-3 @ 20'	20	25	ND <5	ND <5	ND <5	ND <5
B-4 @ 5'	370	40	ND <5	ND <5	ND <5	ND <5
B-4 @ 20'	26	14	ND <5	ND <5	ND <5	ND <5
B-5 @ 5'	130,000	150	260	290	42	28
B-5 @ 25'	16	TR ≈3	ND <5	ND <5	ND <5	ND <5
B-6 @ 20'	ND <5	ND <5	ND <5	ND <5	ND <5	ND <5
B-7 @ 5'	ND <5	13	ND <5	ND <5	ND <5	ND <5
B-7 20'	ND <5	ND <5	ND <5	ND <5	ND <5	ND <5

PCE = Tetrachloroethene
TCE = Trichloroethene
1,1,1-TCA = 1,1,1-Trichloroethane
1,1-DCE = 1,1-Dichloroethene
1,1-DCA = 1,1-Dichloroethane
ND <5 = Not detected, detection limit noted
TR = Trace

Elevated concentrations of tetrachloroethene (PCE) (130,000 parts per billion [ppb]) and diesel-like petroleum hydrocarbons (7,300 ppm) were detected in samples from the sump area boring (B-5) at 5 feet. The concentration of these constituents (PCE and diesel) decreased in B-5 at 25 feet to 16 ppb and 88 ppm, respectively. Slightly elevated levels of PCE and toluene were also found in soil samples from the adjacent borings (B-1, B-2, B-3, and B-4).

The concentrations of petroleum hydrocarbons in soil reported in the diesel category were not an exact match to the diesel standard. Mr. Tony Hart, laboratory manager for Curtis and Tompkins Laboratory, indicated that aged diesel can give similar responses. Other solvents, such as Stoddard solvent, can also show up in the diesel range in analyses for extractable petroleum hydrocarbons.

CONCLUSIONS

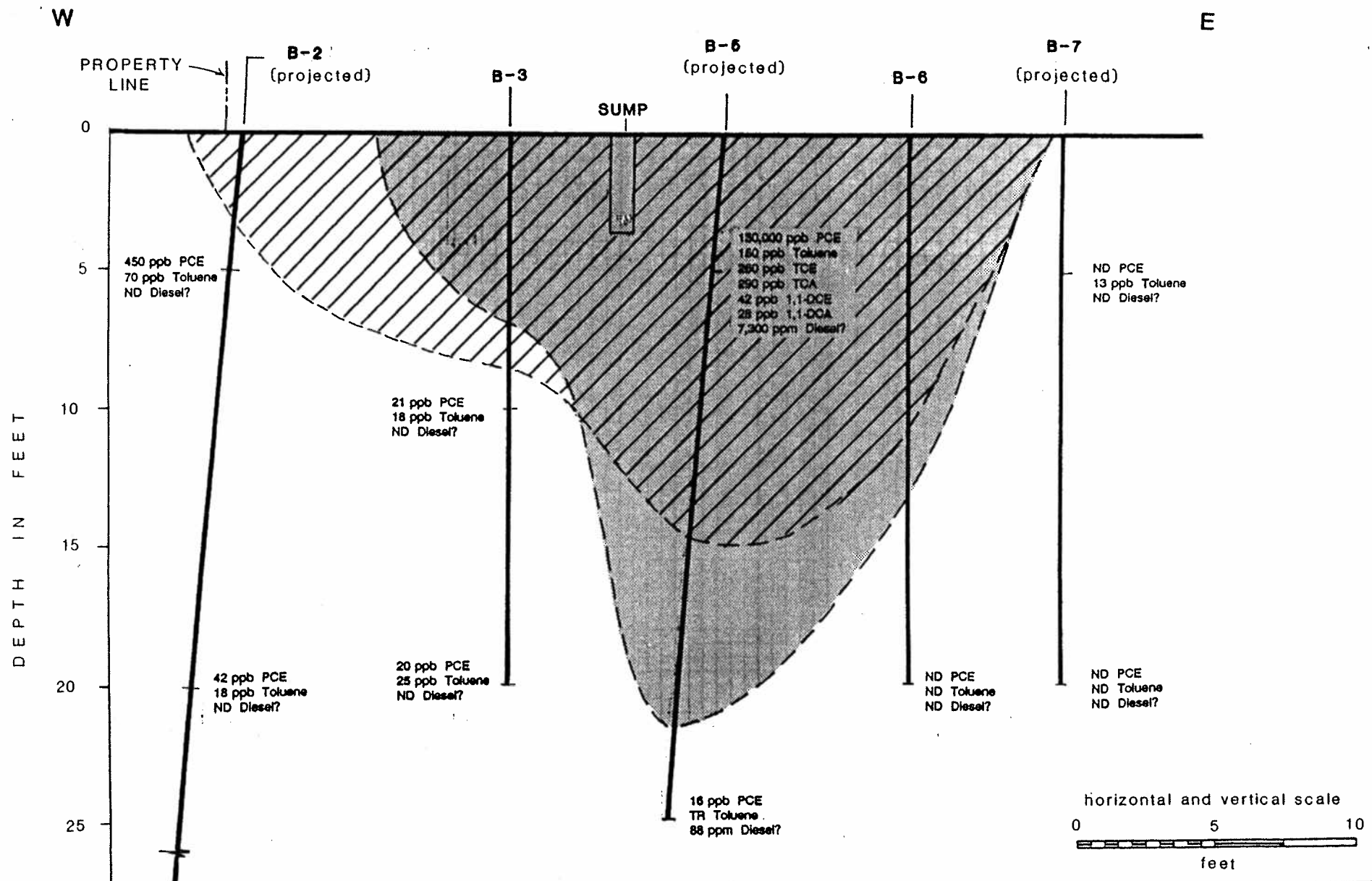
Based on the high concentration of PCE, toluene and the diesel range petroleum hydrocarbons beneath the small sump area, we conclude that a release of hazardous constituents has occurred at that location. A leak in the underground storage tank may be responsible for some of the contamination; however, the sump is the most probable origination point for the release. PCE, toluene and petroleum hydrocarbon contamination extends vertically down to approximately 25 feet at the sump location.

Figure 2 shows approximate limits of the horizontal extent of PCE, toluene and diesel-like contamination. The analytical results indicate that the limits of the combined toluene and PCE contamination extend further west than the diesel-like contamination. This may reflect an additional discharge point, but more likely indicates different migration characteristics of the constituents or a difference in soil type. The Los Angeles County Department of Public Works has set a cleanup level of 100 ppm for

diesel compounds encountered in soils. This is the maximum level of diesel contamination in soil that may be allowed to remain in place without undergoing removal or remediation. Contamination near Boring B-5 is present down to approximately 15 to 20 feet (Figures 3 and 4). Concentrations of PCE, toluene and diesel-like constituents decrease rapidly with lateral distance from B-5. It is likely that the contamination extends beneath Buildings 1 and 2 near B-4 and B-5, respectively. The contours depicted on Figure 2 were approximated by the interpolation of known lateral reductions in concentrations of the constituents tested. Contamination is present to the east of the sump area, but does not extend to B-6.

PCE, among others, is a solvent commonly used in the manufacturing industry. Toluene can be a component of certain solvents or fuel. If the toluene present at the site was a component of fuel, we would expect to detect a substantial concentration of other fuel constituents, such as benzene, ethylbenzene and xylenes, in the purgeable organics analyses. However, none of these latter fuel additives were detected in the samples tested. Therefore, the observed levels of toluene suggest that they may be attributable to solvent and may either be a result of weathering of the solvent or the boosting of solvent to improve a particular property. The petroleum hydrocarbons detected in the diesel range could also be either weathered diesel or a C12 to C30 solvent.

PROJECT No. 58-0605 DATE 10/17/90 PROJ. MGR. J.O. DFTR. M.G.



HAWKER PACIFIC

SUN VALLEY, CALIFORNIA

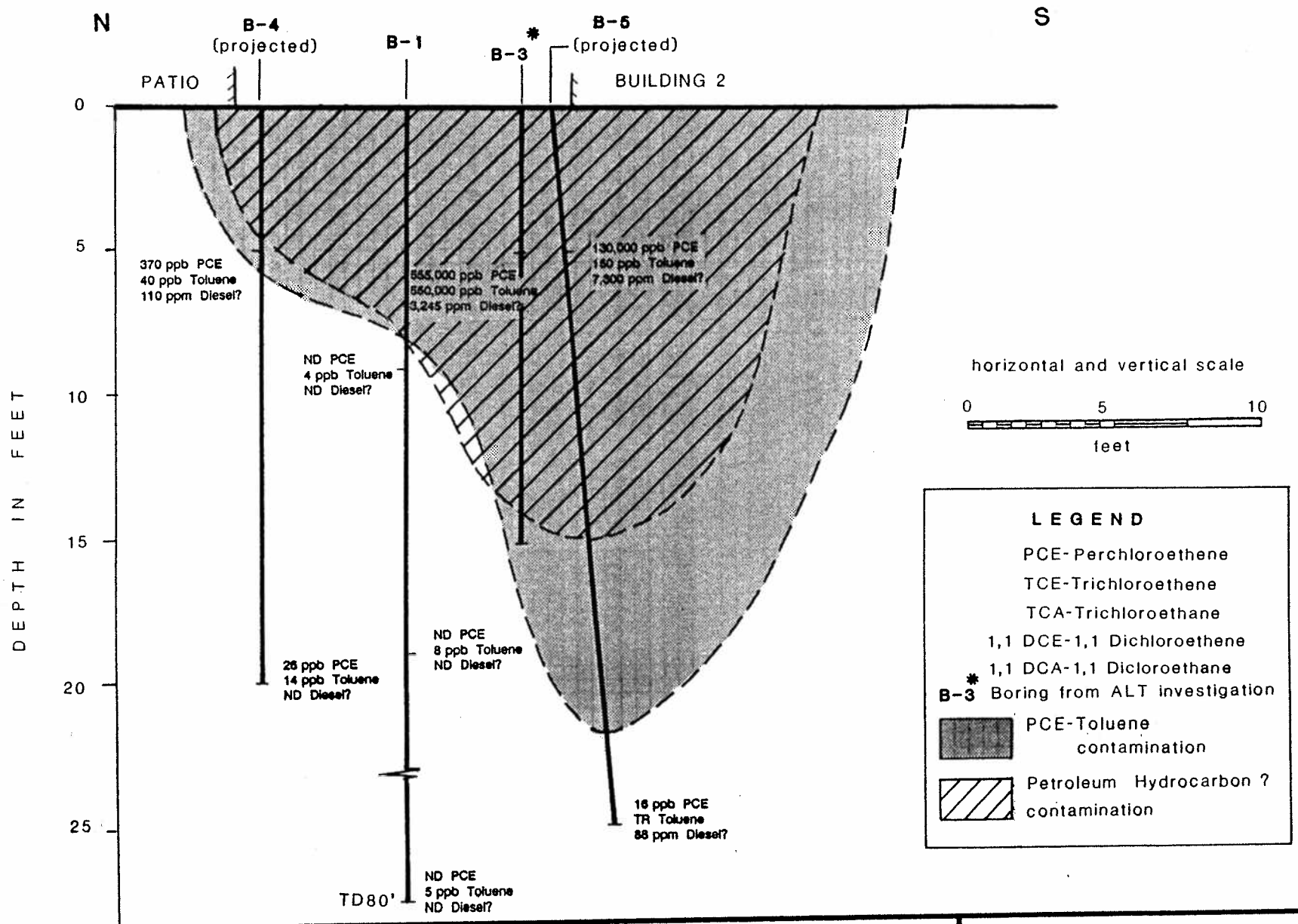
EAST-WEST CROSS SECTION

Proj. No. 58-0605

FIGURE 3

LAW ENVIRONMENTAL, INC.

PROJECT No. 58-0605 DATE 10/18/90 PROJ. MGR. J.O. DFTR. M.G.



HAWKER PACIFIC

SUN VALLEY, CALIFORNIA

NORTH-SOUTH CROSS SECTION

Proj. No. 58-0605

FIGURE 4

LAW ENVIRONMENTAL, INC.

RECOMMENDATIONS

- Law Environmental recommends that steps be taken to remove the underground storage tank at the west end of the alley between Buildings 1 and 2. The data from analyses of the samples collected in this investigation and the previous assessment should be sufficient information for the lead agency to complete a tank closure report.

- It is recommended that the PCE and toluene-contaminated soil either be removed or remediated in-place. If soil is to be excavated, we recommend that a structural engineer be consulted to determine the stability of adjacent structures during and after removal of the material. Under the August 8, 1988 Land Disposal Restrictions, land disposal of this soil is prohibited. The specific test to determine the Toxicity Characteristic Leaching Program (TCLP) concentration of PCE for site soils has not been performed. The data we do have, which indicates up to 555 ppm of PCE, suggests that the TCLP limit of 0.7 mg/l is probably exceeded. Toluene is not a TCLP regulated constituent, however, it is on the proposed list.

Remediation Alternatives

Excavation and incineration appears, at this point, to be the most costly, although most rapid, remedial measure. We estimate that a

minimum of 50 cubic yards of soil and an approximate maximum of 110 cubic yards may require remediation.

Soil vapor extraction is the preferred method of remediation at the site. Law Environmental is confident that soil vapor extraction will prove to be an effective method of significantly reducing PCE and toluene concentrations within site soils. We base this opinion on the nature of the underlying alluvial soils which are predominantly composed of sand and gravel.

Soil vapor extraction is generally considered a fairly long-term remedial measure, commonly requiring one to two years or more for completion. We estimate that 90 percent removal of recoverable PCE and toluene may be achieved within the first six months of operation of a full-scale system. Operation and maintenance costs should be minimal following the initial six months of operation, exclusive of many restrictions and monitoring requirements which may be imposed by regulatory agencies.

-ooo-

APPENDIX A

HEALTH AND SAFETY PLAN

JOB NAME Hawker Pacific **JOB NO.** 58-0605

HEALTH AND SAFETY PLAN

Health and Safety Officer _____ Date _____
Elaine Silvestro

Principal Engineer/Scientist _____ Date _____
Glenn A. Brown

Field Safety Coordinator _____ Date _____
Juli Oborne

DATE PREPARED	FIELD DATES
08/24/90	8/27-31/90

Site location: 11310 Sherman Way
Sun Valley, California

MEDICAL SURVEILLANCE

All Law Environmental field personnel participate in the corporate medical program.

EMERGENCY TELEPHONE NUMBER

Emergency phone numbers, and direction to phone or medical facility are to be determined by the Field Safety Coordinator prior to beginning work.

HOSPITAL:	(818) 984-2000 Coldwater Canyon Hospital
FIRE:	911
POLICE:	911
SAFETY:	Jack Peng (404) 447-0544
	Elaine Silvestro (818) 848-0214

HOSPITAL LOCATION

Coldwater Canyon Hospital is located at 6421 Coldwater Canyon Avenue, North Hollywood, California.

PROJECT No. 58-0612 DATE 10/8/90 PROJ. MGR. J.O. DFTR. M.G.

HAWKER PACIFIC SAN FERNANDO VALLEY, CA.	HOSPITAL LOCATION MAP	Proj. No. 58-0612 FIGURE 1

LAW ENVIRONMENTAL, INC.

DIRECTIONS TO HOSPITAL

Travel west (left) on Sherman Way for approximately 2 miles. Turn south (left) on Coldwater Canyon Avenue and drive approximately one mile. Turn right into the hospital parking lot prior to Victory Boulevard.

EMERGENCY PROCEDURES

Exposures

Skin - remove contaminated clothing immediately, wash with soap and water.

Inhalation - remove to fresh air.

Eye Contact - flush with eye wash or water; get medical help if indicated. Contaminants may be absorbed through eyes.

Ingestion - get medical help if indicated.

Injuries - Administer first aid if appropriate. Medical emergencies take precedence over decontamination. Have change ready for telephone.

Fire/Explosion - Use hand extinguishers if appropriate and safety permits. Contact Project Manager and client officials. Evacuate if necessary to upwind location.

Accidental Spill/Release - (1) Pick up, isolate, or contain spill; (2) Evacuate area if necessary; (3) Contact project manager, Jack Peng, or Branch Manager.

SITE INFORMATION

HAZARDOUS/TOXIC MATERIALS

Chemical data sheets for the compounds listed below may be found at the end of the text.

Tetrachloroethene
Toluene

HAZARDOUS ASSESSMENT

Tetrachloroethene and toluene have been released to the soil from a sump located in the alley between Buildings 1 and 2.

CLEAN AREA/DECONTAMINATION

To be determined at the site by the Field Safety Coordinator.

WORK PROCEDURES

PLANNED FIELD ACTIVITIES

Drilling of soil borings and collection of soil samples. Obtain samples at five-foot intervals using a California split-spoon sampler.

SITE AND/OR PERSONNEL MONITORING

An organic vapor detector will be used to monitor borings and excavated soils. Areas of airborne dust and odor should be avoided. All contact with soil should be avoided.

CLOTHING AND PROTECTIVE GEAR

Subcontractors and others not employed by Law Environmental will not be furnished protective equipment unless prior arrangements have been made.

Required at the Work Site

Level C Protection
Tyvek suits, half or full-face cartridge respirator with appropriate organic vapor cartridges, rubber boots and gloves, hard-hats, protective eyewear.

The Field Safety Coordinator will determine the appropriate level of personal protective equipment required to be worn based on conditions encountered in the field.

DECONTAMINATION PROCEDURES

Reusable safety gear will be washed prior to reuse or removing from site. Sampling tools, etc., will be decontaminated as prescribed in the Work Plan, or as directed by the Field Safety Coordinator.

DISPOSAL PROCEDURES

Contaminated items should be: (1) disposed of as directed by client officials; or (2) bagged or containerized and left on-site if possible.

WORK PRECAUTIONS

1. Prior to going on-site, the Field Safety Coordinator will review available data and information pertaining to site conditions, potential contaminants, and work to be accomplished.

2. Prior to beginning any work on the site, the FSC shall brief all field personnel on the contents of this plan.

3. No eating, drinking, smoking, chewing gum, or tobacco is permitted at the work site.

4. Wear prescribed safety equipment as directed in this Plan.

5. Remove and discard any clothing that becomes contaminated.

6. Do not go anywhere on-site other than where directed by the FSC.

7. Wash exposed skin with soap and water before leaving site.

8. Potable water shall be provided in sufficient quantity to provide emergency washing.

9. Use safe and legal procedures for sample storage and shipment.

PERSONNEL AUTHORIZED TO ENTER SITE

By initialing and dating this form, the listed individual acknowledges that he has read, understands, and will comply with the requirements of this Health and Safety Plan.

Name	Date	Initials

Other personnel who may handle hazardous materials

_____

_____

_____

_____

_____

_____

****

FIELD SAFETY COORDINATOR'S SUMMARY

To be completed after each phase of work.

a. There was no violation of this Health and Safety Plan and no obvious contamination of any personnel.

b. The following incidents, violations, exposures, or contamination occurred. (Tell who, when, contaminants, circumstances, first aid or medical assistance needed.)

Field Safety Coordinator _____ **Date** _____

*** * * RETURN TO HEALTH AND SAFETY OFFICER * * ***

ALL accidents or incidents resulting in **POTENTIAL** exposure to hazardous materials must be reported as soon as possible to:

1. Health/Safety Officer, or
2. Project Manager, or
3. Chief Engineer, or
4. Branch Manager

Complete for all jobs:

Job name _____ Job no. _____

Dates in field

_____

Next phase of work scheduled

_____

****

!!! RETURN COPY OF THIS PAGE TO HEALTH AND SAFETY OFFICER !!!

****

APPENDIX B

SOIL SAMPLING PROTOCOL

SOIL SAMPLING PROTOCOL

The following procedures are followed when sampling soil with the hollow-stem auger drilling technique.

1. Continuous flight, hollow-stem augers are used.

2. All augers, samplers and downhole equipment are steam cleaned prior to use and between borings. This minimizes the possibility of cross-contamination occurring.

3. A registered geologist or other appropriately trained personnel observes the drilling, visually logs the soils, and obtains soil samples at appropriate intervals (usually 5 feet) as determined by field conditions.

4. The Unified Soils Classification System (USCS) is utilized to classify the soils. Rocks are classified according to the Colorado School of Mines "Classification of Rocks."

5. The soil samples are obtained using a modified California split-spoon sampler, which accommodates two to six sample tubes. Various tubes are utilized to accommodate the different analyses required:

Brass Tubes: 2-1/2 by 3 or 6 inches - for all organics and general analyses, excluding copper and zinc.

Stainless Steel Tubes: 2-1/2 by 3 or 6 inches - for all organics and metals analyses excluding chrome and nickel.

6. The tubes are scrubbed with a brush and TSP or equivalent cleaning agent, then rinsed with tap water. If required, the tubes are steam cleaned. Tubes are given a final rinse with distilled water and delivered to the drilling site in closed buckets or equivalent to preclude recontamination.

7. After the sample tubes are removed from the sampler, the latter is completely disassembled and scrubbed in TSP or equivalent and tap water. The sampler is rinsed with tap water, and distilled water (if required) and reassembled with the required number of clean tubes.

8. Unclean tubes are washed with TSP or equivalent solution, rinsed with tap water, etc. as described in 6 above.

9. In loose soils, a sand catcher is used to prevent soil from falling out of the sampler.

10. The sampler is driven 12 or 18 inches at each sampling. Generally, the lowest tube is retained for analysis. The

other tube or tubes are retained for split sampling or as a back-up.

11. The sample is logged in. After testing for the presence of combustible gases or volatile organic compounds, the sample is capped with Teflon liners and tight-fitting plastic caps to minimize leaching and cross-contamination. Black vinyl electrical tape is used to tightly secure the caps to the sample tube. The samples are labeled and preserved in clean ice chests containing Blue Ice or equivalent, to keep the samples at or about 4 degrees Celsius.

12. The samples are kept in the ice chest until delivered to a State and EPA certified testing laboratory, the same day if physically possible. The undelivered samples are stored or archived in secured Law Environmental sample storage at or about 4 degrees Celsius. A freezer is also available at Law Environmental if freezing samples is required or recommended.

13. All samples are accompanied by a chain-of-custody form, documenting the time, date, and person-in-charge since retrieval of the sample from the sampler.

14. In case of visual and/or olfactory evidence of contamination, soil cuttings are impounded in drums carrying

cautionary labels. The drums are secured from random contact. Custody of the drums and their content will remain with the client at all times.

15. If chemical analysis of the soil indicates the presence of elevated levels of pollutants, then the Client will be informed of the test results and advised as to the lawful means of disposal or detoxification. Upon the written request and authorization by the Client, Law Environmental will organize the disposal or detoxification of the impounded soil in accordance with all applicable Federal, State, County and local regulations.

16. The soil sample tube label includes:

    Job Number
    Boring Number and Depth
    Sampling Date
    Sampler's Initials
    Test to be Performed (if known at the time of sampling).

17. An indelible marking pen or a ball-point pen is used to mark the sample tubes.

18. A detailed log is kept of all field activities.

SUBSURFACE COMBUSTIBLE GAS OR VOLATILE ORGANIC COMPOUND SAMPLING PROTOCOL

1. The contents of one of the sample tubes is placed into a resealable plastic bag. The soil in the bag is broken up and left in the sun for approximately 10 minutes. A hole is then made in the plastic bag.

2. The end of the analyzer probe, such as GasTechtor 1238, Foxboro 108 GC, or equivalent, is inserted into the hole, and the Parts Per Million (PPM) or Lower Explosive Limit (LEL) scale read for indications of combustible gas or volatile organic compounds. The reading is taken only after the instrument needle ceases drifting and stabilizes. Readings are recorded on the boring logs.

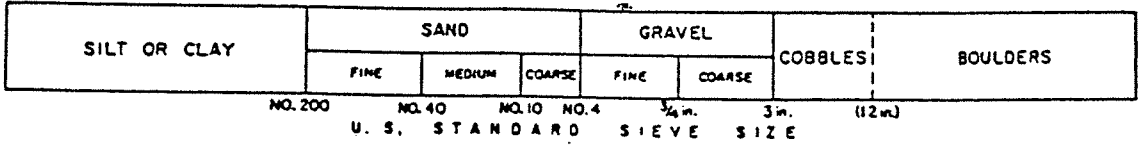
APPENDIX C

BORING LOGS

MAJOR DIVISIONS			GROUP SYMBOLS	TYPICAL NAMES
COARSE GRAINED SOILS (More than 50% of material is LARGER than No. 200 sieve size)	GRAVELS (More than 50% of coarse fraction is LARGER than the No. 4 sieve size)	CLEAN GRAVELS (Little or no fines)	GW	Well graded gravels, gravel-sand mixtures, little or no fines.
			GP	Poorly graded gravels or gravel-sand mixtures, little or no fines.
		GRAVELS WITH FINES (Appreciable amt. of fines)	GM	Silty gravels, gravel-sand-silt mixtures.
			GC	Clayey gravels, gravel-sand-clay mixtures.
	SANDS (More than 50% of coarse fraction is SMALLER than the No. 4 sieve size)	CLEAN SANDS (Little or no fines)	SW	Well graded sands, gravelly sands, little or no fines.
			SP	Poorly graded sands or gravelly sands, little or no fines.
		SANDS WITH FINES (Appreciable amt. of fines)	SM	Silty sands, sand-silt mixtures.
			SC	Clayey sands, sand-clay mixtures.
FINE GRAINED SOILS (More than 50% of material is SMALLER than No. 200 sieve size)	SILTS AND CLAYS (Liquid limit LESS than 50)		ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity.
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays.
			OL	Organic silts and organic silty clays of low plasticity.
	SILTS AND CLAYS (Liquid limit GREATER than 50)		MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts.
			CH	Inorganic clays of high plasticity, fat clays.
			OH	Organic clays of medium to high plasticity, organic silts.
HIGHLY ORGANIC SOILS			Pt	Peat and other highly organic soils.

BOUNDARY CLASSIFICATIONS: Soils possessing characteristics of two groups are designated by combinations of group symbols.

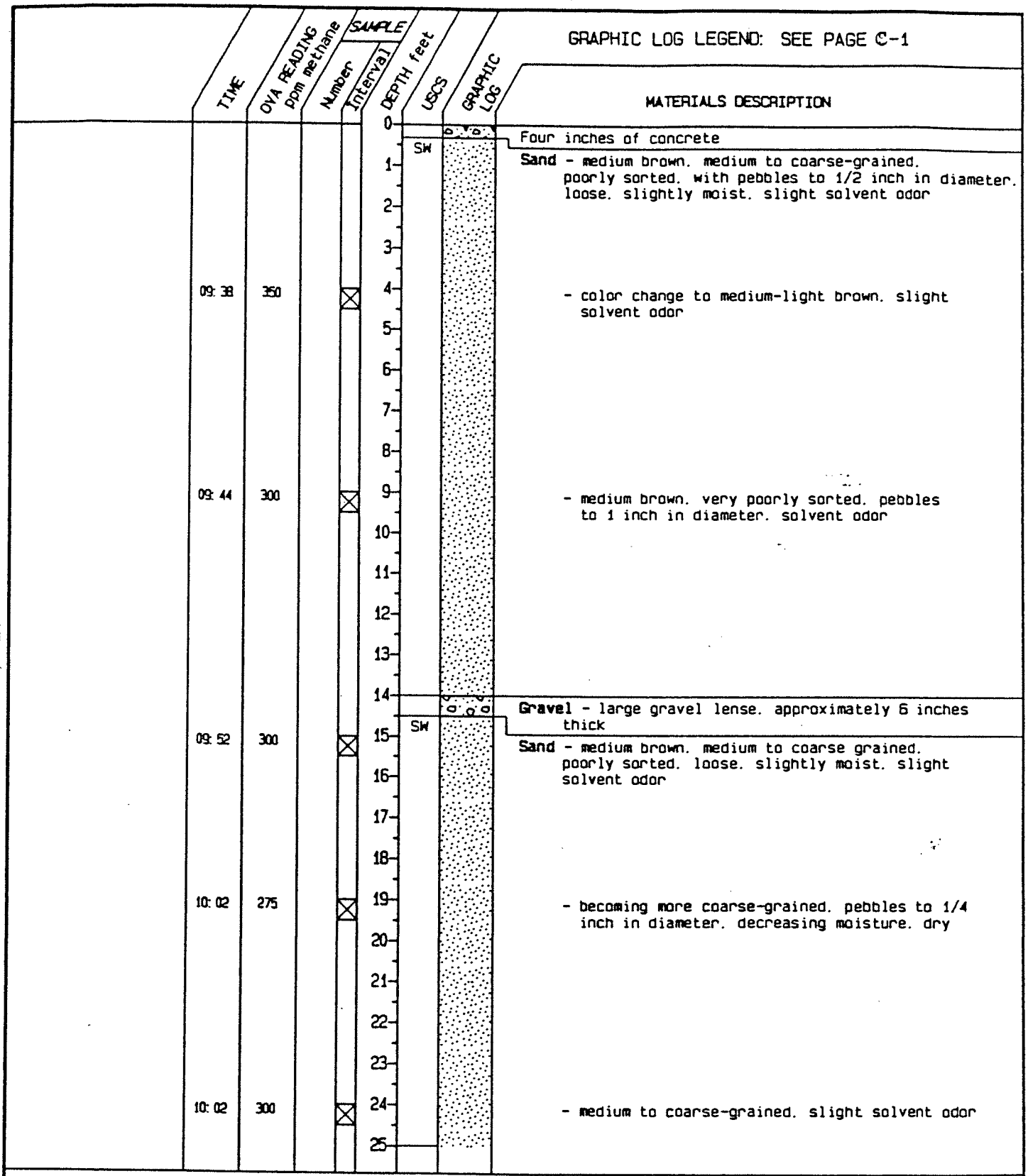
PARTICLE SIZE LIMITS



PROJECT No. ____ DATE ____ PROJ. MGR. ____ DFTR. ____

Reference:
The Unified Soil Classification System, Corps of Engineers, U.S. Army Technical Memorandum No 3-357, Vol 1, March, 1953. (Revised April, 1960)

GRAPHIC LOG LEGEND



PROJECT No. 58-0605 DATE 09/26/1990 PROJ. MGR. DFTR.

OWNER: Hawker Pacific
LOCATION: 11310 Sherman Way
DRILLED BY: Lane - Datum
METHOD: Hollow-stem auger

BOREHOLE DEPTH: 70 feet
BOREHOLE DIAMETER: 8 inches
DATE DRILLED: 08/28/90
LOGGED BY: JGO

HAWKER PACIFIC
11310 SHERMAN WAY
PROJECT NO. 58-0605

BORING LOG
No.B-1

GRAPHIC LOG LEGEND: SEE PAGE C-1

TIME	OVA READING ppm methane	SAMPLE Number	SAMPLE Interval	DEPTH feet	USCS	GRAPHIC LOG	MATERIALS DESCRIPTION
				25	SW		
				26			
				27			
				28			
10: 13	400		⊠	29			- coarse-grained. slight solvent odor
				30			
				31			
				32			
				33			
10: 21	400		⊠	34			- medium to coarse-grained. pebbles to 1/2 inch in diameter. slight solvent odor
				35			
				36			
				37			
				38			
10: 31	400		⊠	39			- pebbles to 1/4 inch in diameter. slight solvent odor
				40			
				41			
				42			
				43			
10: 41	350		⊠	44			- becoming medium-grained with some coarse sand. moderately sorted. slight solvent odor
				45			
				46			
				47			
				48			
10: 47	450		⊠	49			- pebbles to 1/2 inch in diameter. slight solvent odor
				50			

OWNER: Hawker Pacific
LOCATION: 11310 Sherman Way
DRILLED BY: Lane - Datum
METHOD: Hollow-stem auger

BOREHOLE DEPTH: 70 feet
BOREHOLE DIAMETER: 8 inches
DATE DRILLED: 08/28/90
LOGGED BY: JGO

PROJECT No. 58-0605 DATE 09/26/1990 PROJ. MGR. _____ DFTR. _____

HAWKER PACIFIC
11310 SHERMAN WAY
PROJECT NO. 58-0605

BORING LOG
No.B-1

LAW ENVIRONMENTAL INC

TIME	OVA READING ppm methane	SAMPLE Number	SAMPLE Interval	DEPTH feet	USCS	GRAPHIC LOG	MATERIALS DESCRIPTION
				50	SW		GRAPHIC LOG LEGEND: SEE PAGE C-1
				51			
				52			
				53			
10:55			⊠	54			- slight solvent odor
				55			
				56			
				57			
				58			
	325		⊠	59			- medium to coarse grained. pebbles to 1/4 inch in diameter. slight solvent odor
				60			
				61			
				62			
				63			
11:41	250		⊠	64			- color change to greyish green to medium brown. fine to very coarse-grained. slightly firm. slightly moist. very slight odor
				65			
				66			
				67			
				68			
12:20	240		⊠	69			- color grey-brown. medium to very coarse-grained. loose. dry. slight odor
				70			NOTES: Refusal at 70 feet. End of boring at 70 feet. No ground water encountered. Backfilled boring with soil to 3 feet then hole-plug.
				71			
				72			
				73			
				74			
				75			

PROJECT No. 58-0605 DATE 09/28/1990 PROJ. MGR. _____ DFTR. _____

OWNER: Hawker Pacific
LOCATION: 11310 Sherman Way
DRILLED BY: Lane - Datum
METHOD: Hollow-stem auger

BOREHOLE DEPTH: 70 feet
BOREHOLE DIAMETER: 8 inches
DATE DRILLED: 08/28/90
LOGGED BY: JGO

HAWKER PACIFIC
11310 SHERMAN WAY
PROJECT NO. 58-0605

BORING LOG
No. B-1

LAW ENVIRONMENTAL, INC.

TIME	OVA READING ppm methane	SAMPLE Number	SAMPLE Interval	DEPTH feet	USCS	GRAPHIC LOG	MATERIALS DESCRIPTION
12:01				70	SW		- DRILL TO 70 FEET. THEN TAKE SAMPLES **Sand** - grey-brown. medium to very coarse-grained. poorly sorted. loose. dry. slight odor
				71			
				72			
				73			
				74	SM		**Silty Sand** - grey to brown. coarse to fine-grained. with granitic pebbles up to 3 inches in diameter. poorly sorted. angular to subangular. loose. damp. no odor detected
13:01	5/5			75			
				76			
				77			- penetration rate very slow
				78			
				79	GM		**Silty Sandy Gravel** - brown. very coarse to fine-grained. with pebbles to 1 inch in diameter. poorly sorted. moderately firm. damp
17:30	2/2			80			**NOTES:** End boring at 80 feet. No ground water encountered. Backfilled boring with soil and patched with concrete.
				81			
				82			
				83			
				84			
				85			
				86			
				87			

GRAPHIC LOG LEGEND: SEE PAGE C-1

OWNER: Hawker Pacific
LOCATION: 11310 Sherman Way
DRILLED BY: Datum
METHOD: Hollow-stem auger

BOREHOLE DEPTH: 80 feet
BOREHOLE DIAMETER: 8 inches
DATE DRILLED: 08/31/90
LOGGED BY: ASH

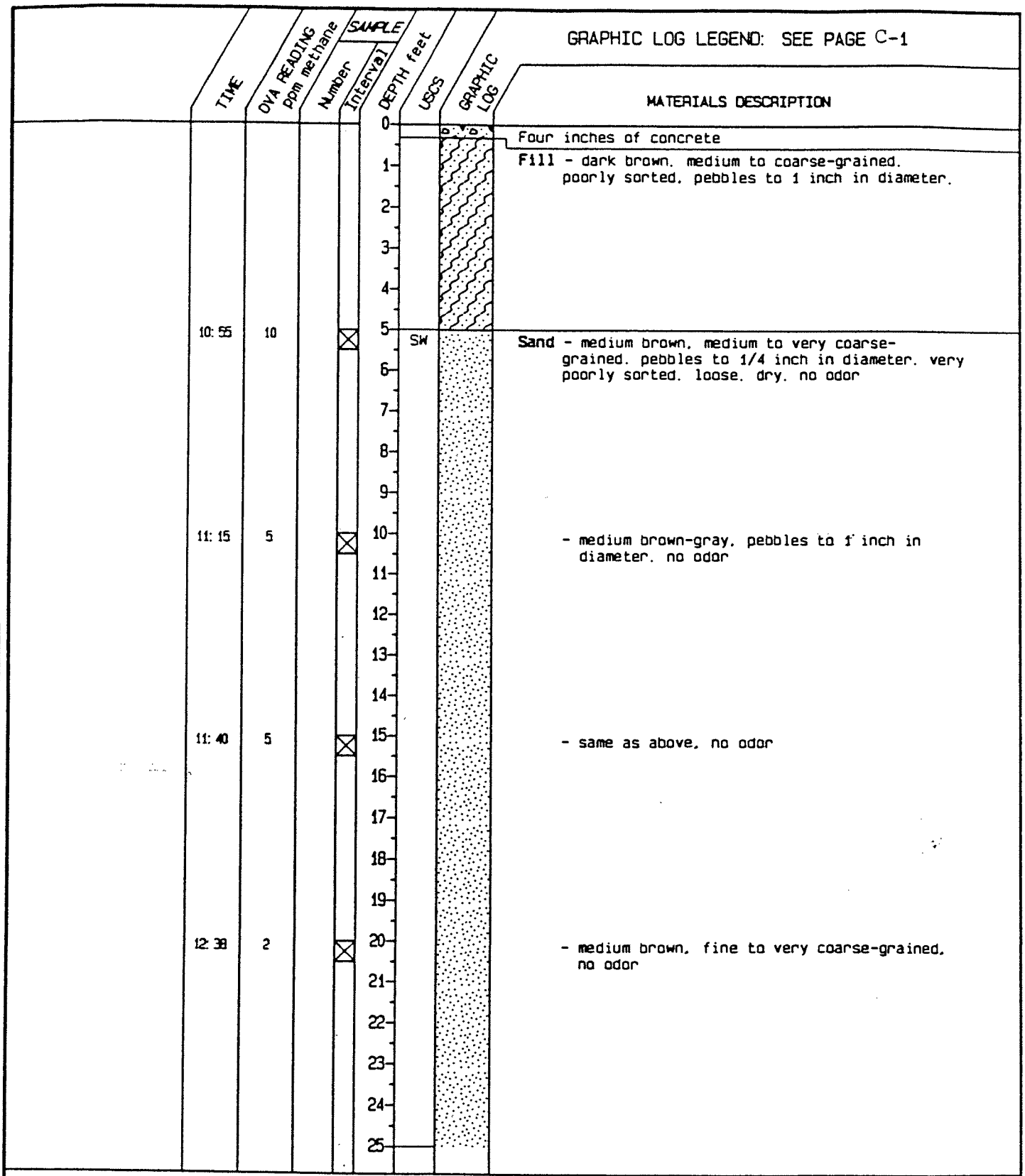
PROJECT No. 58-0605 DATE 09/28/1990 PROJ. MGR. _____ DFTR. _____

HAWKER PACIFIC
11310 SHERMAN WAY
PROJECT NO. 58-0605

BORING LOG
No.B-1A

PAGE 1 of 1

LAW ENVIRONMENTAL, INC.



PROJECT No. 58-0605 DATE 09/26/1990 PROJ. MGR. _____ DFTR. _____

OWNER: Hawker Pacific
LOCATION: 11310 Sherman Way
DRILLED BY: Datum
METHOD: Hollow-stem auger

BOREHOLE DEPTH: 40 feet
BOREHOLE DIAMETER: 6 inches
DATE DRILLED: 08/29/90
LOGGED BY: JGO

HAWKER PACIFIC
11310 SHERMAN WAY
PROJECT NO. 58-0605

BORING LOG
No. B-2

LAW ENVIRONMENTAL INC

GRAPHIC LOG LEGEND: SEE PAGE C-1

TIME	OVA READING ppm methane	SAMPLE Number	SAMPLE Interval	DEPTH feet	USCS	GRAPHIC LOG	MATERIALS DESCRIPTION
12:59	1		⊠	25	SW		- pebbles to 1/4 inch in diameter. no odor
				26			
				27			
				28			
				29			
01:25	1		⊠	30			- as above. pebbles to 1 inch in diameter
				31			
				32			
				33			
				34			
02:00	0		⊠	35			- pebbles to 1/4 inch in diameter. no odor
				36			
				37			
				38			
				39			
02:35	0		⊠	40			NOTES: End of boring at 40 feet. No ground water encountered. Backfilled boring with soil and patched with concrete.
				41			
				42			
				43			
				44			
				45			
				46			
				47			
				48			
				49			
				50			

OWNER: Hawker Pacific
LOCATION: 11310 Sherman Way
DRILLED BY: Datum
METHOD: Hollow-stem auger

BOREHOLE DEPTH: 40 feet
BOREHOLE DIAMETER: 6 inches
DATE DRILLED: 08/29/90
LOGGED BY: JGO

PROJECT No. 58-0605 DATE 09/26/1990 PROJ. MGR. _____ DFTR. _____

HAWKER PACIFIC
11310 SHERMAN WAY
PROJECT NO. 58-0605

BORING LOG
No.B-2

LAW ENVIRONMENTAL, INC.

GRAPHIC LOG LEGEND: SEE PAGE C-1

TIME	OVA READING ppm methane	SAMPLE Number	SAMPLE Interval	DEPTH feet	USCS	GRAPHIC LOG	MATERIALS DESCRIPTION
				0			One inch of concrete
							Fill - dark brown, heavy odor
10:55	10			5	SW		**Sand** - grey-brown, medium to very coarse-grained, with pebbles to 1/2 inch in diameter, poorly sorted, loose, dry, heavy chlorinated solvent odor
11:15	5			10			- medium brown, pebbles to 1 inch in diameter, slightly moist, heavy chlorinated solvent odor
11:40	5			15			- same as above
12:38	2			20			- medium-light brown, dry, slight chlorinated odor
							NOTES: End of boring at 20 feet. No ground water encountered, no caving. Backfilled boring with soil.

OWNER: Hawker Pacific
LOCATION: 11310 Sherman Way
DRILLED BY: Datum
METHOD: Hollow-stem auger

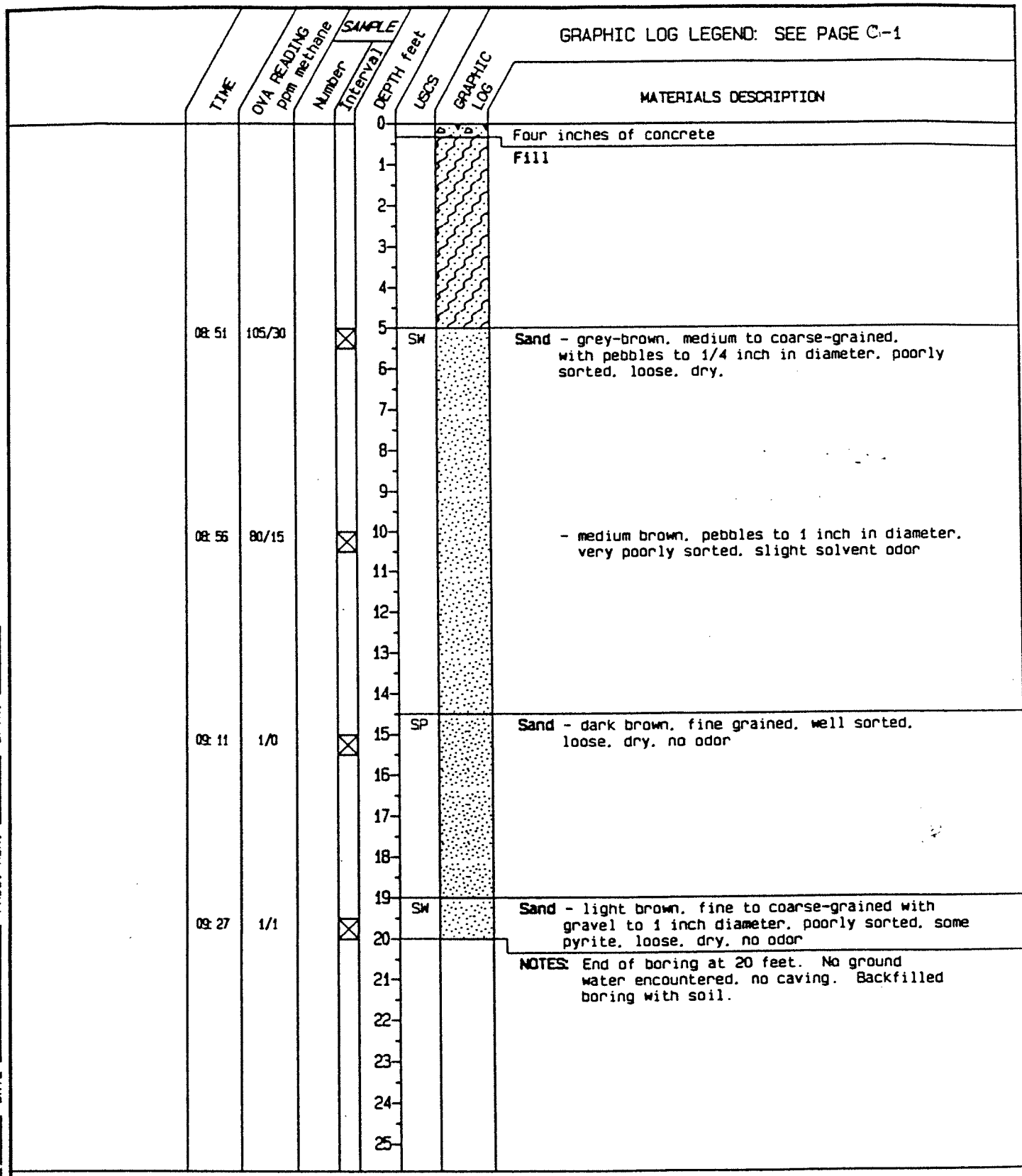
BOREHOLE DEPTH: 20 feet
BOREHOLE DIAMETER: 6 inches
DATE DRILLED: 08/29/90
LOGGED BY: JGO

PROJECT No. 58-0605 DATE 09/27/1990 PROJ. MGR. _____ DFTR. _____

HAWKER PACIFIC
11310 SHERMAN WAY
PROJECT NO. 58-0605

BORING LOG
No.B-3

LAW ENVIRONMENTAL INC



PROJECT No. 58-0605 DATE 09/26/1990 PROJ. MGR. DFTR.

OWNER: Hawker Pacific
LOCATION: 11310 Sherman Way
DRILLED BY: Datum
METHOD: Hollow-stem auger

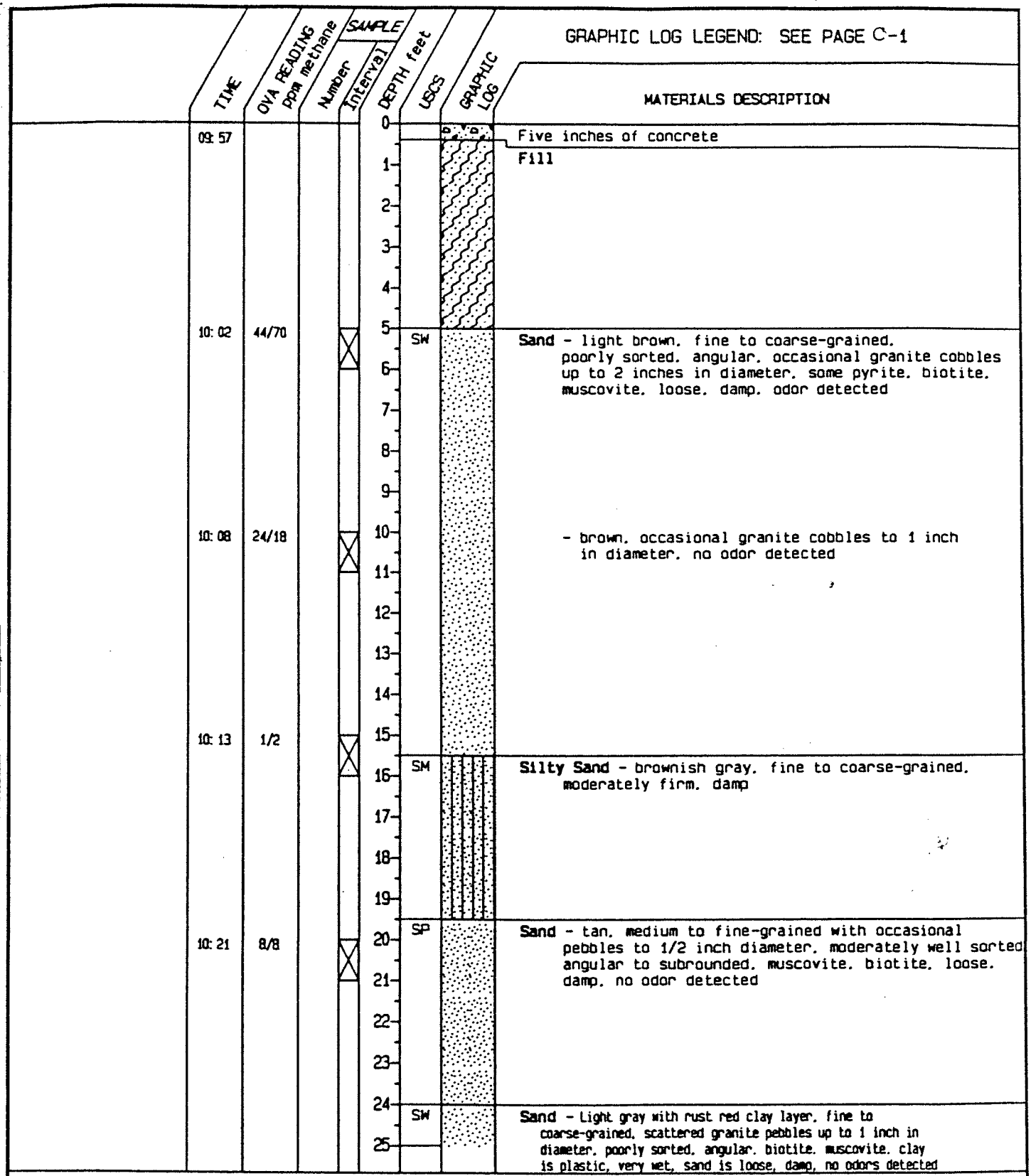
BOREHOLE DEPTH: 20 feet
BOREHOLE DIAMETER: 8 inches
DATE DRILLED: 08/31/90
LOGGED BY: JGO

HAWKER PACIFIC
11310 SHERMAN WAY
PROJECT NO. 58-0605

BORING LOG
No. B-4

PAGE 1 of 1

LAW ENVIRONMENTAL INC



PROJECT No. 58-0605 DATE 09/27/1990 PROJ. MGR. _____ DFTR. _____

OWNER: Hawker Pacific
LOCATION: 11310 Sherman Way
DRILLED BY: Lane Environmental
METHOD: Hollow-stem auger

BOREHOLE DEPTH: 26 feet
BOREHOLE DIAMETER: 6 inches
DATE DRILLED: 08/31/90
LOGGED BY: ASH

HAWKER PACIFIC
11310 SHERMAN WAY
PROJECT NO. 58-0605

BORING LOG
No. B-5

LAW ENVIRONMENTAL INC

GRAPHIC LOG LEGEND: SEE PAGE C-1

TIME	OVA READING ppm methane	SAMPLE Number	SAMPLE Interval	DEPTH feet	USCS	GRAPHIC LOG	MATERIALS DESCRIPTION
10:38	1/4		X	25	SW		
				26			NOTES: End of boring at 26 feet. No ground water encountered, no caving. Backfilled boring with soil, patched with concrete.
				27			
				28			
				29			
				30			
				31			
				32			
				33			
				34			
				35			
				36			
				37			
				38			
				39			
				40			
				41			
				42			
				43			
				44			
				45			
				46			
				47			
				48			
				49			
				50			

OWNER: Hawker Pacific
LOCATION: 11310 Sherman Way
DRILLED BY: Lane Environmental
METHOD: Hollow-stem auger

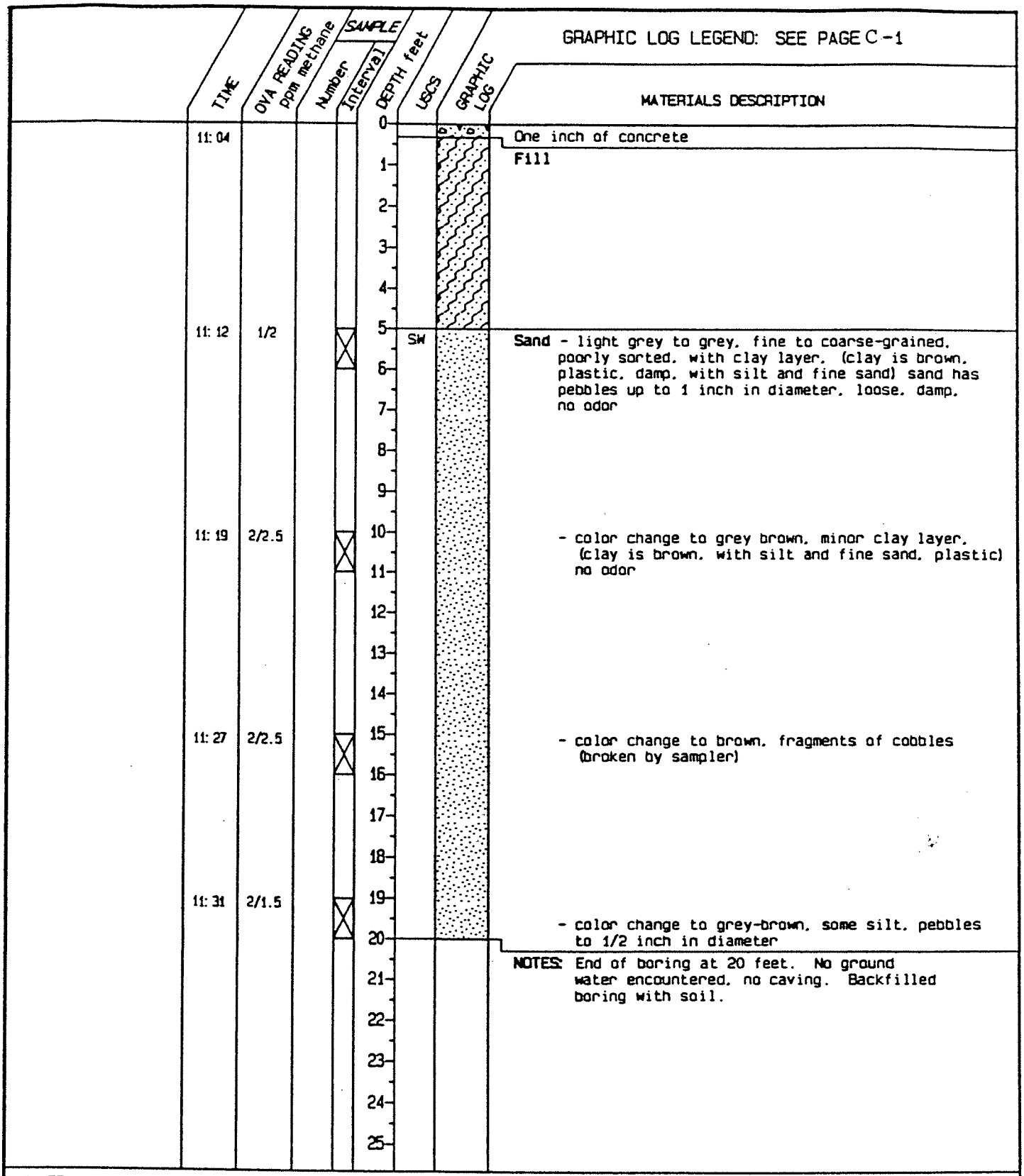
BOREHOLE DEPTH: 26 feet
BOREHOLE DIAMETER: 6 inches
DATE DRILLED: 08/31/90
LOGGED BY: ASH

PROJECT No. 58-0605 DATE 09/27/1990 PROJ. MGR. _____ DFTR. _____

HAWKER PACIFIC
11310 SHERMAN WAY
PROJECT NO. 58-0605

BORING LOG
No.B-5

LAW ENVIRONMENTAL INC



OWNER: Hawker Pacific
LOCATION: 11310 Sherman Way
DRILLED BY: Lane - Western
METHOD: Hollow-stem auger

BOREHOLE DEPTH: 20 feet
BOREHOLE DIAMETER: 6 inches
DATE DRILLED: 08/31/90
LOGGED BY: ASH

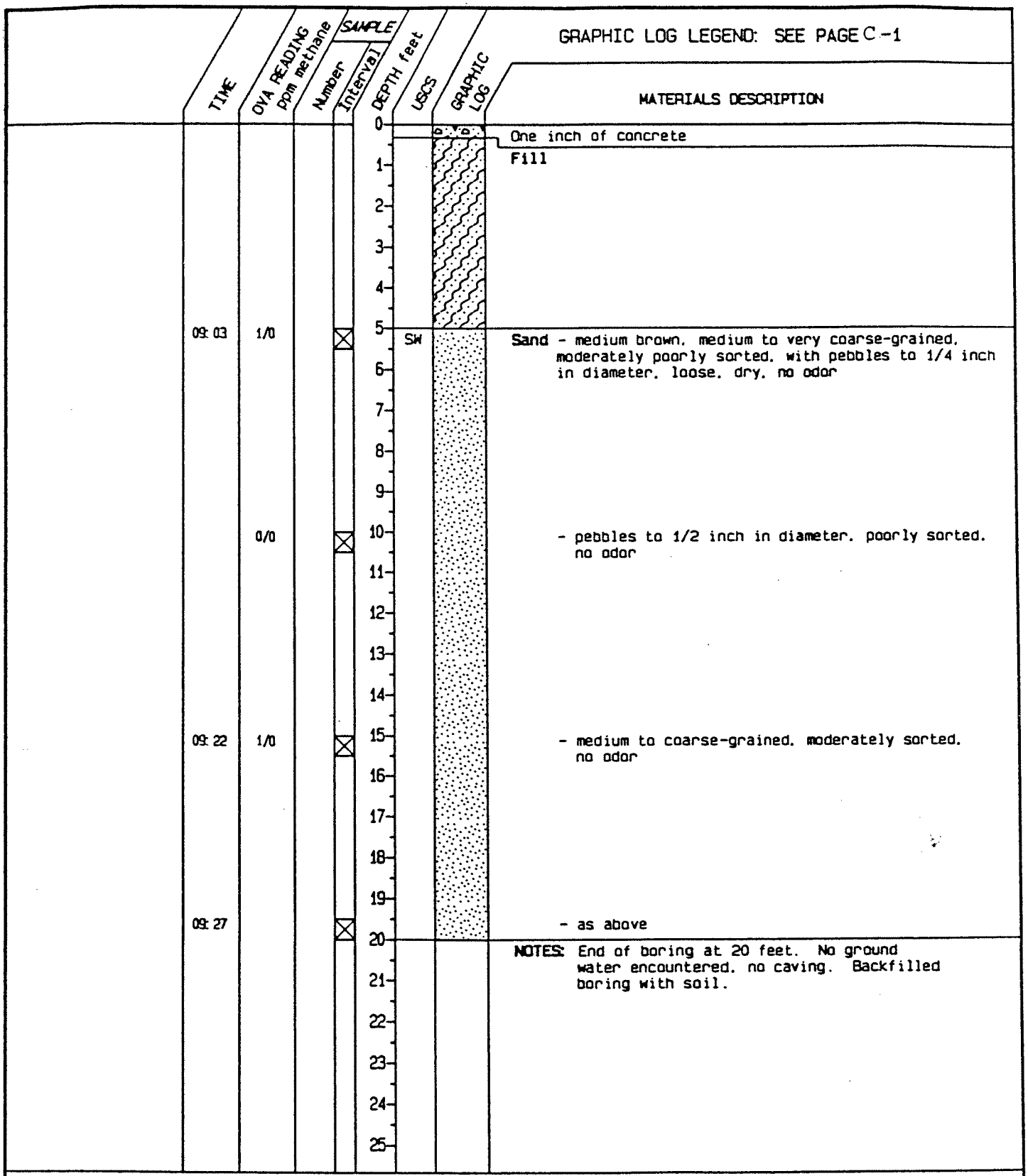
PROJECT No. 58-0605 DATE 09/27/1990 PROJ. MGR. DFTR.

HAWKER PACIFIC
11310 SHERMAN WAY
PROJECT NO. 58-0605

BORING LOG
No. B-6

PAGE 1 of 1

LAW ENVIRONMENTAL, INC.



OWNER: Hawker Pacific
LOCATION: 11310 Sherman Way
DRILLED BY: Lane - Western
METHOD: Hollow-stem auger

BOREHOLE DEPTH: 20 feet
BOREHOLE DIAMETER: 8 inches
DATE DRILLED: 08/31/90
LOGGED BY: JGO

PROJECT No. 58-0605 DATE 09/27/1990 PROJ. MGR. _____ DFTR. _____

HAWKER PACIFIC
11310 SHERMAN WAY
PROJECT NO. 58-0605

BORING LOG
No.B-7

PAGE 1 of 1

LAW ENVIRONMENTAL, INC.

APPENDIX D

LABORATORY ANALYSES OF SOIL SAMPLES

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
1250 S. Boyle Ave., Los Angeles, CA 90023, Phone (213) 269-7421, Fax (213) 268-5328

DATE RECEIVED: 08/29/90
DATE REPORTED: 09/05/90

LAB NUMBER: 200524

CLIENT: LAW ENVIRONMENTAL, INC.

REPORT ON: FOUR SOIL SAMPLES

PROJECT #: 58-0605

LOCATION: HAWKER PACIFIC

RESULTS: SEE ATTACHED

Reviewed By

Laboratory Director

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 200524
CLIENT: LAW ENVIRONMENTAL, INC.
PROJECT #: 58-0605
LOCATION: HAWKER PACIFIC

DATE RECEIVED: 08/29/90
DATE ANALYZED: 08/31-01
DATE REPORTED: 09/05/90

METHOD: EPA 8015 (MODIFIED)
TOTAL VOLATILE HYDROCARBONS AS GASOLINE IN SOILS & WASTES
EXTRACTION: EPA 5030 PURGE & TRAP

LAB ID	SAMPLE ID	TVH AS GASOLINE (ug/Kg)
1	B-1-9	ND (500)
2	B-1-29	ND (500)
3	B-1-49	ND (500)
4	B-1-69	ND (500)

ND = NOT DETECTED; LIMIT OF DETECTION IN PARENTHESES.

QA/QC DATA SUMMARY:

Precision (Relative % Difference):	2
Accuracy (Spike % Recovery):	101

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 200524-1
CLIENT: LAW ENVIRONMENTAL, INC.
PROJECT #: 58-0605
SAMPLE ID: B-1-9

DATE RECEIVED: 08/29/90
DATE ANALYZED: 08/31/90
DATE REPORTED: 09/05/90

METHOD: EPA 8240
VOLATILE ORGANICS IN SOIL

COMPOUND	RESULT	PQL
	--ug/Kg--	
Chloromethane	ND	10
Bromomethane	ND	10
Vinyl chloride	ND	10
Chloroethane	ND	10
Methylene chloride	ND	5
Acetone	ND	10
Carbon disulfide	ND	5
Trichlorofluoromethane	ND	5
1,1-Dichloroethene	ND	5
1,1-Dichloroethane	ND	5
cis-1,2-Dichloroethene	ND	5
trans-1,2-Dichloroethene	ND	5
Chloroform	ND	5
Freon 113	ND	5
1,2-Dichloroethane	ND	5
2-Butanone	ND	10
1,1,1-Trichloroethane	ND	5
Carbon tetrachloride	ND	5
Vinyl acetate	ND	10
Bromodichloromethane	ND	5
1,2-Dichloropropane	ND	5
cis-1,3-Dichloropropene	ND	5
Trichloroethylene	ND	5
Dibromochloromethane	ND	5
1,1,2-Trichloroethane	ND	5
Benzene	ND	5
trans-1,3-Dichloropropene	ND	5
2-Chloroethylvinyl ether	ND	10
Bromoform	ND	5
2-Hexanone	ND	10
4-Methyl-2-pentanone	ND	10
1,1,2,2-Tetrachloroethane	ND	5
Tetrachloroethene	ND	5
Toluene	TRACE (~4)	5
Chlorobenzene	ND	5
Ethyl benzene	ND	5
Styrene	ND	5
Total xylenes	ND	5

QA/QC SUMMARY: SURROGATE RECOVERIES	PQL = PRACTICAL QUANTITATION LIMIT
1,2-Dichloroethane-d4	97 %
Toluene-d8	100 %
Bromofluorobenzene	96 %

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 200524-2
CLIENT: LAW ENVIRONMENTAL, INC.
PROJECT #: 58-0605
SAMPLE ID: B-1-29

DATE RECEIVED: 08/29/90
DATE ANALYZED: 08/31/90
DATE REPORTED: 09/05/90

METHOD: EPA 8240
VOLATILE ORGANICS IN SOIL

COMPOUND	RESULT	PQL
	--ug/Kg--	
Chloromethane	ND	10
Bromomethane	ND	10
Vinyl chloride	ND	10
Chloroethane	ND	10
Methylene chloride	ND	5
Acetone	ND	10
Carbon disulfide	ND	5
Trichlorofluoromethane	ND	5
1,1-Dichloroethene	ND	5
1,1-Dichloroethane	ND	5
cis-1,2-Dichloroethene	ND	5
trans-1,2-Dichloroethene	ND	5
Chloroform	ND	5
Freon 113	ND	5
1,2-Dichloroethane	ND	5
2-Butanone	ND	10
1,1,1-Trichloroethane	ND	5
Carbon tetrachloride	ND	5
Vinyl acetate	ND	10
Bromodichloromethane	ND	5
1,2-Dichloropropane	ND	5
cis-1,3-Dichloropropene	ND	5
Trichloroethylene	ND	5
Dibromochloromethane	ND	5
1,1,2-Trichloroethane	ND	5
Benzene	ND	5
trans-1,3-Dichloropropene	ND	5
2-Chloroethylvinyl ether	ND	10
Bromoform	ND	5
2-Hexanone	ND	10
4-Methyl-2-pentanone	ND	10
1,1,2,2-Tetrachloroethane	ND	5
Tetrachloroethene	ND	5
Toluene	8	5
Chlorobenzene	ND	5
Ethyl benzene	ND	5
Styrene	ND	5
Total xylenes	ND	5

QA/QC SUMMARY: SURROGATE RECOVERIES	PQL = PRACTICAL QUANTITATION LIMIT
1,2-Dichloroethane-d4	99 %
Toluene-d8	101 %
Bromofluorobenzene	98 %

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 200524-3
CLIENT: LAW ENVIRONMENTAL, INC.
PROJECT #: 58-0605
SAMPLE ID: B-1-49

DATE RECEIVED: 08/29/90
DATE ANALYZED: 08/31/90
DATE REPORTED: 09/05/90

METHOD: EPA 8240
VOLATILE ORGANICS IN SOIL

COMPOUND	RESULT	PQL
	--ug/Kg--	
Chloromethane	ND	10
Bromomethane	ND	10
Vinyl chloride	ND	10
Chloroethane	ND	10
Methylene chloride	ND	5
Acetone	ND	10
Carbon disulfide	ND	5
Trichlorofluoromethane	ND	5
1,1-Dichloroethene	ND	5
1,1-Dichloroethane	ND	5
cis-1,2-Dichloroethene	ND	5
trans-1,2-Dichloroethene	ND	5
Chloroform	ND	5
Freon 113	ND	5
1,2-Dichloroethane	ND	5
2-Butanone	ND	10
1,1,1-Trichloroethane	ND	5
Carbon tetrachloride	ND	5
Vinyl acetate	ND	10
Bromodichloromethane	ND	5
1,2-Dichloropropane	ND	5
cis-1,3-Dichloropropene	ND	5
Trichloroethylene	ND	5
Dibromochloromethane	ND	5
1,1,2-Trichloroethane	ND	5
Benzene	ND	5
trans-1,3-Dichloropropene	ND	5
2-Chloroethylvinyl ether	ND	10
Bromoform	ND	5
2-Hexanone	ND	10
4-Methyl-2-pentanone	ND	10
1,1,2,2-Tetrachloroethane	ND	5
Tetrachloroethene	ND	5
Toluene	5	5
Chlorobenzene	ND	5
Ethyl benzene	ND	5
Styrene	ND	5
Total xylenes	ND	5

QA/QC SUMMARY: SURROGATE RECOVERIES PQL = PRACTICAL QUANTITATION LIMIT

1,2-Dichloroethane-d4	97 %
Toluene-d8	102 %
Bromofluorobenzene	95 %

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 200524-4
CLIENT: LAW ENVIRONMENTAL, INC.
PROJECT #: 58-0605
SAMPLE ID: B-1-69

DATE RECEIVED: 08/29/90
DATE ANALYZED: 08/31/90
DATE REPORTED: 09/05/90

METHOD: EPA 8240
VOLATILE ORGANICS IN SOIL

COMPOUND	RESULT	PQL
	--ug/Kg--	
Chloromethane	ND	10
Bromomethane	ND	10
Vinyl chloride	ND	10
Chloroethane	ND	10
Methylene chloride	ND	5
Acetone	ND	10
Carbon disulfide	ND	5
Trichlorofluoromethane	ND	5
1,1-Dichloroethene	ND	5
1,1-Dichloroethane	ND	5
cis-1,2-Dichloroethene	ND	5
trans-1,2-Dichloroethene	ND	5
Chloroform	ND	5
Freon 113	ND	5
1,2-Dichloroethane	ND	5
2-Butanone	ND	10
1,1,1-Trichloroethane	ND	5
Carbon tetrachloride	ND	5
Vinyl acetate	ND	10
Bromodichloromethane	ND	5
1,2-Dichloropropane	ND	5
cis-1,3-Dichloropropene	ND	5
Trichloroethylene	ND	5
Dibromochloromethane	ND	5
1,1,2-Trichloroethane	ND	5
Benzene	ND	5
trans-1,3-Dichloropropene	ND	5
2-Chloroethylvinyl ether	ND	10
Bromoform	ND	5
2-Hexanone	ND	10
4-Methyl-2-pentanone	ND	10
1,1,2,2-Tetrachloroethane	ND	5
Tetrachloroethene	ND	5
Toluene	8	5
Chlorobenzene	ND	5
Ethyl benzene	ND	5
Styrene	ND	5
Total xylenes	ND	5

QA/QC SUMMARY: SURROGATE RECOVERIES PQL = PRACTICAL QUANTITATION LIMIT

1,2-Dichloroethane-d4	96 %
Toluene-d8	101 %
Bromofluorobenzene	95 %

LAW ENVIRONMENTAL, INC.
3420 N. San Fernando Blvd.
Suite 200
Burbank, California 91504
(818) 848-0214

CHAIN OF CUSTODY RECORD

Lab Log Number _____

Client Name: Law Environmental | Project Number: 58-0605

Project Name: Hawker Pacific

Report Attention: Julie Oborne | Sampled by: Julie Oborne

Analyses Required: 8240 | 8015/8020 | TVH

Sample Number	Date Sampled	Time Sampled	Type*	Sample Description	Number of Containers	8240	8015/8020							Remarks
1	8-28-90	9:44	SO	B-1-9	1	X	X							TVH
2	8-28-90	10:13	SO	B-1-29	1	X	X							↓
3	8-28-90	10:47	SO	B-1-49	1	X	X							
4	8-28-90	12:20	SO	B-1-69	1	X	X							

	Signature	Company	Date	Time
Relinquished by	[signature]	Law Environmental	8/29/90	2:00
Received by	[signature]			
Relinquished by				
Received by				
Relinquished by				
Received by				

NOTE: Samples are discarded 30 days after results are reported, unless other arrangements are made.
Hazardous samples will be returned to client or disposed of at client expense.

*AQ - Aqueous; NA - Nonaqueous; SL - Sludge; GW - Ground Water; SO - Soil; PE - Petroleum; OT - Other

Curtis & Tompkins, Ltd., Analytical Laboratories. Since 1878
1250 S. Boyle Ave., Los Angeles, CA 90023. Phone (213) 269-7421. Fax (213) 268-5328

DATE RECEIVED: 09/04/90
DATE REPORTED: 09/10/90

LAB NUMBER: 200541

CLIENT: LAW ENVIRONMENTAL, INC.

REPORT ON: EIGHT SOIL SAMPLES

PROJECT #: 58-0605

LOCATION: HAWKER PACIFIC

RESULTS: SEE ATTACHED

Reviewed By Victoria Nicholson

Laboratory Director

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 200541
CLIENT: LAW ENVIRONMENTAL, INC.
PROJECT #: 58-0605
LOCATION: HAWKER PACIFIC

DATE RECEIVED: 09/04/90
DATE ANALYZED: 09/06/90
DATE REPORTED: 09/10/90

METHOD: EPA 8015 (MODIFIED)
EXTRACTABLE PETROLEUM HYDROCARBONS IN SOIL
EXTRACTION: DHS LUFT PROCEDURE

LAB ID	SAMPLE ID	GASOLINE (mg/Kg)	KEROSENE (mg/Kg)	DIESEL (mg/Kg)
1	B-4-5	ND (10)	ND (10)	110*
2	B-4-20	ND (10)	ND (10)	ND (10)
3	B-5-5	ND (50)	ND (50)	7,300**
4	B-5-25	ND (10)	ND (10)	88***
5	B-6-20	ND (10)	ND (10)	ND (10)
6	B-8-5	ND (10)	ND (10)	ND (10)
7	B-8-20	ND (10)	ND (10)	ND (10)
8	B1A-74'	ND (10)	ND (10)	ND (10)

* HYDROCARBONS IN DIESEL RANGE, DOES NOT MATCH STD (C19-C30)
** HYDROCARBONS IN DIESEL RANGE, DOES NOT MATCH STD (C12-C30)
*** HYDROCARBONS IN DIESEL RANGE, DOES NOT MATCH STD (C17-C30)

ND = NOT DETECTED; PRACTICAL QUANTITATION LIMIT IN PARENTHESES.

QA/QC DATA SUMMARY:

Precision (Relative % Difference):	18
Accuracy (Spike % Recovery):	83

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 200541-1
CLIENT: LAW ENVIRONMENTAL, INC.
PROJECT #: 58-0605
SAMPLE ID: B-4-5

DATE RECEIVED: 09/04/90
DATE ANALYZED: 09/04-05
DATE REPORTED: 09/10/90

METHOD: EPA 8240
VOLATILE ORGANICS IN SOIL

COMPOUND		RESULT	PQL
		--ug/Kg--	
Chloromethane		ND	10
Bromomethane		ND	10
Vinyl chloride		ND	10
Chloroethane		ND	10
Methylene chloride		ND	5
Acetone		ND	10
Carbon disulfide		ND	5
Trichlorofluoromethane		ND	5
1,1-Dichloroethene		ND	5
1,1-Dichloroethane		ND	5
cis-1,2-Dichloroethene		ND	5
trans-1,2-Dichloroethene		ND	5
Chloroform		ND	5
Freon 113		ND	5
1,2-Dichloroethane		ND	5
2-Butanone		ND	10
1,1,1-Trichloroethane		ND	5
Carbon tetrachloride		ND	5
Vinyl acetate		ND	10
Bromodichloromethane		ND	5
1,2-Dichloropropane		ND	5
cis-1,3-Dichloropropene		ND	5
Trichloroethylene		ND	5
Dibromochloromethane		ND	5
1,1,2-Trichloroethane		ND	5
Benzene		ND	5
trans-1,3-Dichloropropene		ND	5
2-Chloroethylvinyl ether		ND	10
Bromoform		ND	5
2-Hexanone		ND	10
4-Methyl-2-pentanone		ND	10
1,1,2,2-Tetrachloroethane		ND	5
Tetrachloroethene	*	370	5
Toluene		40	5
Chlorobenzene		ND	5
Ethyl benzene		ND	5
Styrene		ND	5
Total xylenes		ND	5

QA/QC SUMMARY: SURROGATE RECOVERIES PQL = PRACTICAL QUANTITATION LIMIT

1,2-Dichloroethane-d4	* 1:5 DIL	101 %
Toluene-d8		103 %
Bromofluorobenzene		93 %

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 200541-2
CLIENT: LAW ENVIRONMENTAL, INC.
PROJECT #: 58-0605
SAMPLE ID: B-4-20

DATE RECEIVED: 09/04/90
DATE ANALYZED: 09/04/90
DATE REPORTED: 09/10/90

METHOD: EPA 8240
VOLATILE ORGANICS IN SOIL

COMPOUND	RESULT	PQL
	--ug/Kg--	
Chloromethane	ND	10
Bromomethane	ND	10
Vinyl chloride	ND	10
Chloroethane	ND	10
Methylene chloride	ND	5
Acetone	ND	10
Carbon disulfide	ND	5
Trichlorofluoromethane	ND	5
1,1-Dichloroethene	ND	5
1,1-Dichloroethane	ND	5
cis-1,2-Dichloroethene	ND	5
trans-1,2-Dichloroethene	ND	5
Chloroform	ND	5
Freon 113	ND	5
1,2-Dichloroethane	ND	5
2-Butanone	ND	10
1,1,1-Trichloroethane	ND	5
Carbon tetrachloride	ND	5
Vinyl acetate	ND	10
Bromodichloromethane	ND	5
1,2-Dichloropropane	ND	5
cis-1,3-Dichloropropene	ND	5
Trichloroethylene	ND	5
Dibromochloromethane	ND	5
1,1,2-Trichloroethane	ND	5
Benzene	ND	5
trans-1,3-Dichloropropene	ND	5
2-Chloroethylvinyl ether	ND	10
Bromoform	ND	5
2-Hexanone	ND	10
4-Methyl-2-pentanone	ND	10
1,1,2,2-Tetrachloroethane	ND	5
Tetrachloroethene	26	5
Toluene	14	5
Chlorobenzene	ND	5
Ethyl benzene	ND	5
Styrene	ND	5
Total xylenes	ND	5

QA/QC SUMMARY: SURROGATE RECOVERIES PQL = PRACTICAL QUANTITATION LIMIT

1,2-Dichloroethane-d4	97 %
Toluene-d8	102 %
Bromofluorobenzene	95 %

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 200541-3
CLIENT: LAW ENVIRONMENTAL, INC.
PROJECT #: 58-0605
SAMPLE ID: B-5-5

DATE RECEIVED: 09/04/90
DATE ANALYZED: 09/04-05
DATE REPORTED: 09/10/90

METHOD: EPA 8240
VOLATILE ORGANICS IN SOIL

COMPOUND		RESULT	PQL
		--ug/Kg--	
Chloromethane		ND	10
Bromomethane		ND	10
Vinyl chloride		ND	10
Chloroethane		ND	10
Methylene chloride		ND	5
Acetone		ND	10
Carbon disulfide		ND	5
Trichlorofluoromethane		ND	5
1,1-Dichloroethene		42	5
1,1-Dichloroethane		28	5
cis-1,2-Dichloroethene		ND	5
trans-1,2-Dichloroethene		ND	5
Chloroform		ND	5
Freon 113		ND	5
1,2-Dichloroethane		ND	5
2-Butanone		ND	10
1,1,1-Trichloroethane	*	290	5
Carbon tetrachloride		ND	5
Vinyl acetate		ND	10
Bromodichloromethane		ND	5
1,2-Dichloropropane		ND	5
cis-1,3-Dichloropropene		ND	5
Trichloroethylene	*	260	5
Dibromochloromethane		ND	5
1,1,2-Trichloroethane		ND	5
Benzene		ND	5
trans-1,3-Dichloropropene		ND	5
2-Chloroethylvinyl ether		ND	10
Bromoform		ND	5
2-Hexanone		ND	10
4-Methyl-2-pentanone		ND	10
1,1,2,2-Tetrachloroethane		ND	5
Tetrachloroethene	**	130,000	5
Toluene		150	5
Chlorobenzene		ND	5
Ethyl benzene		ND	5
Styrene		ND	5
Total xylenes		ND	5

QA/QC SUMMARY: SURROGATE RECOVERIES PQL = PRACTICAL QUANTITATION LIMIT

1,2-Dichloroethane-d4	*	1:5 DIL	105 %
Toluene-d8	**	1:1000 DIL	96 %
Bromofluorobenzene			75 %

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 200541-4
CLIENT: LAW ENVIRONMENTAL, INC.
PROJECT #: 58-0605
SAMPLE ID: B-5-25

DATE RECEIVED: 09/04/90
DATE ANALYZED: 09/05/90
DATE REPORTED: 09/10/90

METHOD: EPA 8240
VOLATILE ORGANICS IN SOIL

COMPOUND	RESULT	PQL
	--ug/Kg--	
Chloromethane	ND	10
Bromomethane	ND	10
Vinyl chloride	ND	10
Chloroethane	ND	10
Methylene chloride	ND	5
Acetone	ND	10
Carbon disulfide	ND	5
Trichlorofluoromethane	ND	5
1,1-Dichloroethene	ND	5
1,1-Dichloroethane	ND	5
cis-1,2-Dichloroethene	ND	5
trans-1,2-Dichloroethene	ND	5
Chloroform	ND	5
Freon 113	ND	5
1,2-Dichloroethane	ND	5
2-Butanone	ND	10
1,1,1-Trichloroethane	ND	5
Carbon tetrachloride	ND	5
Vinyl acetate	ND	10
Bromodichloromethane	ND	5
1,2-Dichloropropane	ND	5
cis-1,3-Dichloropropene	ND	5
Trichloroethylene	ND	5
Dibromochloromethane	ND	5
1,1,2-Trichloroethane	ND	5
Benzene	ND	5
trans-1,3-Dichloropropene	ND	5
2-Chloroethylvinyl ether	ND	10
Bromoform	ND	5
2-Hexanone	ND	10
4-Methyl-2-pentanone	ND	10
1,1,2,2-Tetrachloroethane	ND	5
Tetrachloroethene	16	5
Toluene	TRACE (~3)	5
Chlorobenzene	ND	5
Ethyl benzene	ND	5
Styrene	ND	5
Total xylenes	ND	5

QA/QC SUMMARY: SURROGATE RECOVERIES PQL = PRACTICAL QUANTITATION LIMIT

1,2-Dichloroethane-d4	105 %
Toluene-d8	103 %
Bromofluorobenzene	97 %

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 200541-5
CLIENT: LAW ENVIRONMENTAL, INC.
PROJECT #: 58-0605
SAMPLE ID: B-6-20

DATE RECEIVED: 09/04/90
DATE ANALYZED: 09/04/90
DATE REPORTED: 09/10/90

METHOD: EPA 8240
VOLATILE ORGANICS IN SOIL

COMPOUND	RESULT	PQL
	--ug/Kg--	
Chloromethane	ND	10
Bromomethane	ND	10
Vinyl chloride	ND	10
Chloroethane	ND	10
Methylene chloride	ND	5
Acetone	ND	10
Carbon disulfide	ND	5
Trichlorofluoromethane	ND	5
1,1-Dichloroethene	ND	5
1,1-Dichloroethane	ND	5
cis-1,2-Dichloroethene	ND	5
trans-1,2-Dichloroethene	ND	5
Chloroform	ND	5
Freon 113	ND	5
1,2-Dichloroethane	ND	5
2-Butanone	ND	10
1,1,1-Trichloroethane	ND	5
Carbon tetrachloride	ND	5
Vinyl acetate	ND	10
Bromodichloromethane	ND	5
1,2-Dichloropropane	ND	5
cis-1,3-Dichloropropene	ND	5
Trichloroethylene	ND	5
Dibromochloromethane	ND	5
1,1,2-Trichloroethane	ND	5
Benzene	ND	5
trans-1,3-Dichloropropene	ND	5
2-Chloroethylvinyl ether	ND	10
Bromoform	ND	5
2-Hexanone	ND	10
4-Methyl-2-pentanone	ND	10
1,1,2,2-Tetrachloroethane	ND	5
Tetrachloroethene	ND	5
Toluene	ND	5
Chlorobenzene	ND	5
Ethyl benzene	ND	5
Styrene	ND	5
Total xylenes	ND	5

QA/QC SUMMARY: SURROGATE RECOVERIES	PQL = PRACTICAL QUANTITATION LIMIT
1,2-Dichloroethane-d4	91 %
Toluene-d8	102 %
Bromofluorobenzene	96 %

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 200541-6
CLIENT: LAW ENVIRONMENTAL, INC.
PROJECT #: 58-0605
SAMPLE ID: B-8-5

DATE RECEIVED: 09/04/90
DATE ANALYZED: 09/04/90
DATE REPORTED: 09/10/90

METHOD: EPA 8240
VOLATILE ORGANICS IN SOIL

COMPOUND	RESULT	PQL
	--ug/Kg--	
Chloromethane	ND	10
Bromomethane	ND	10
Vinyl chloride	ND	10
Chloroethane	ND	10
Methylene chloride	ND	5
Acetone	ND	10
Carbon disulfide	ND	5
Trichlorofluoromethane	ND	5
1,1-Dichloroethene	ND	5
1,1-Dichloroethane	ND	5
cis-1,2-Dichloroethene	ND	5
trans-1,2-Dichloroethene	ND	5
Chloroform	ND	5
Freon 113	ND	5
1,2-Dichloroethane	ND	5
2-Butanone	ND	10
1,1,1-Trichloroethane	ND	5
Carbon tetrachloride	ND	5
Vinyl acetate	ND	10
Bromodichloromethane	ND	5
1,2-Dichloropropane	ND	5
cis-1,3-Dichloropropene	ND	5
Trichloroethylene	ND	5
Dibromochloromethane	ND	5
1,1,2-Trichloroethane	ND	5
Benzene	ND	5
trans-1,3-Dichloropropene	ND	5
2-Chloroethylvinyl ether	ND	10
Bromoform	ND	5
2-Hexanone	ND	10
4-Methyl-2-pentanone	ND	10
1,1,2,2-Tetrachloroethane	ND	5
Tetrachloroethene	ND	5
Toluene	13	5
Chlorobenzene	ND	5
Ethyl benzene	ND	5
Styrene	ND	5
Total xylenes	ND	5

QA/QC SUMMARY: SURROGATE RECOVERIES	PQL = PRACTICAL QUANTITATION LIMIT
1,2-Dichloroethane-d4	90 %
Toluene-d8	100 %
Bromofluorobenzene	91 %

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 200541-7
CLIENT: LAW ENVIRONMENTAL, INC.
PROJECT #: 58-0605
SAMPLE ID: B-8-20

DATE RECEIVED: 09/04/90
DATE ANALYZED: 09/05/90
DATE REPORTED: 09/10/90

METHOD: EPA 8240
VOLATILE ORGANICS IN SOIL

COMPOUND	RESULT	PQL
	--ug/Kg--	
Chloromethane	ND	10
Bromomethane	ND	10
Vinyl chloride	ND	10
Chloroethane	ND	10
Methylene chloride	ND	5
Acetone	ND	10
Carbon disulfide	ND	5
Trichlorofluoromethane	ND	5
1,1-Dichloroethene	ND	5
1,1-Dichloroethane	ND	5
cis-1,2-Dichloroethene	ND	5
trans-1,2-Dichloroethene	ND	5
Chloroform	ND	5
Freon 113	ND	5
1,2-Dichloroethane	ND	5
2-Butanone	ND	10
1,1,1-Trichloroethane	ND	5
Carbon tetrachloride	ND	5
Vinyl acetate	ND	10
Bromodichloromethane	ND	5
1,2-Dichloropropane	ND	5
cis-1,3-Dichloropropene	ND	5
Trichloroethylene	ND	5
Dibromochloromethane	ND	5
1,1,2-Trichloroethane	ND	5
Benzene	ND	5
trans-1,3-Dichloropropene	ND	5
2-Chloroethylvinyl ether	ND	10
Bromoform	ND	5
2-Hexanone	ND	10
4-Methyl-2-pentanone	ND	10
1,1,2,2-Tetrachloroethane	ND	5
Tetrachloroethene	ND	5
Toluene	ND	5
Chlorobenzene	ND	5
Ethyl benzene	ND	5
Styrene	ND	5
Total xylenes	ND	5

QA/QC SUMMARY: SURROGATE RECOVERIES PQL = PRACTICAL QUANTITATION LIMIT

1,2-Dichloroethane-d4	92 %
Toluene-d8	101 %
Bromofluorobenzene	95 %

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 200541-8
CLIENT: LAW ENVIRONMENTAL, INC.
PROJECT #: 58-0605
SAMPLE ID: B1A-74'

DATE RECEIVED: 09/04/90
DATE ANALYZED: 09/05/90
DATE REPORTED: 09/10/90

METHOD: EPA 8240
VOLATILE ORGANICS IN SOIL

COMPOUND	RESULT	PQL
	--ug/Kg--	
Chloromethane	ND	10
Bromomethane	ND	10
Vinyl chloride	ND	10
Chloroethane	ND	10
Methylene chloride	ND	5
Acetone	ND	10
Carbon disulfide	ND	5
Trichlorofluoromethane	ND	5
1,1-Dichloroethene	ND	5
1,1-Dichloroethane	ND	5
cis-1,2-Dichloroethene	ND	5
trans-1,2-Dichloroethene	ND	5
Chloroform	ND	5
Freon 113	ND	5
1,2-Dichloroethane	ND	5
2-Butanone	ND	10
1,1,1-Trichloroethane	ND	5
Carbon tetrachloride	ND	5
Vinyl acetate	ND	10
Bromodichloromethane	ND	5
1,2-Dichloropropane	ND	5
cis-1,3-Dichloropropene	ND	5
Trichloroethylene	ND	5
Dibromochloromethane	ND	5
1,1,2-Trichloroethane	ND	5
Benzene	ND	5
trans-1,3-Dichloropropene	ND	5
2-Chloroethylvinyl ether	ND	10
Bromoform	ND	5
2-Hexanone	ND	10
4-Methyl-2-pentanone	ND	10
1,1,2,2-Tetrachloroethane	ND	5
Tetrachloroethene	ND	5
Toluene	TRACE (~4)	5
Chlorobenzene	ND	5
Ethyl benzene	ND	5
Styrene	ND	5
Total xylenes	ND	5

QA/QC SUMMARY: SURROGATE RECOVERIES	PQL = PRACTICAL QUANTITATION LIMIT
1,2-Dichloroethane-d4	90 %
Toluene-d8	102 %
Bromofluorobenzene	93 %

LAW ENVIRONMENTAL, INC.
3320 ~~3000~~ N. San Fernando Blvd.
~~Suite 200~~
Burbank, California 91504
(818) 848-0214

CHAIN OF CUSTODY RECORD

Lab Log Number _____

Client Name	Project Number
Law Environmental	58-0605
Project Name Hawker Pacific	
Report Attention Juli Oborne	**Sampled by** Juli Oborne

Sample Number	Date Sampled	Time Sampled	Type*	Sample Description	Number of Containers	Analyses Required: 8240	Analyses Required: 8015	Remarks
B1A-74'	8-31-90	1301	SO	6" Brass Tube	1	X	X	USE CAUTION may have high levels of PCE + Toluene - up to 500 ppm

	Signature	Company	Date	Time
Relinquished by	D. Higgins	Law Environmental	9/4	12:45
Received by		Curtis & Tompkins	9/4/90	12:45
Relinquished by				
Received by				
Relinquished by				
Received by				

NOTE: Samples are discarded 30 days after results are reported, unless other arrangements are made.
Hazardous samples will be returned to client or disposed of at client expense.

*AQ - Aqueous; NA - Nonaqueous; SL - Sludge; GW - Ground Water; SO - Soil; PE - Petroleum; OT - Other

LAW ENVIRONMENTAL, INC.
~~2320~~ ~~1100~~ N. San Fernando Blvd.
~~Suite 200~~
Burbank, California 91504
(818) 848-0214

CHAIN OF CUSTODY RECORD

Lab Log Number _____

Client Name: LAW Environmental
Project Number: 58-0605
Project Name: Hunter Pacific
Report Attention: Juli Oborne
Sampled by: Juli Oborne

Analyses Required: 8240, 8015

Sample Number	Date Sampled	Time Sampled	Type*	Sample Description	Number of Containers	8240	8015	Remarks
B-4-5	8-31-90	8:51	SO	16" Brass Tube	1	X	X	may have high lvls of PCE & Toluene up to 500 ppm
B-4-20	8-31-90	9:27	SO	6" " "	1	X	X	
B-5-5	8-31-90	10:02	SO	" " "	1	X	X	
B-5-25	8-31-90	10:38	SO	" " "	1	X	X	
B-6-20	8-31-90	11:31	SO	" " "	1	X	X	Expect low lvls of volatiles
B-8-5	8-31-90	9:03	SO	" " "	1	X	X	
B-8-20	8-31-90	9:32	SO	" " "	1	X	X	

	Signature	Company	Date	Time
Relinquished by	Elaine Sylvester	Law Environmental	9-4-90	11:15
Received by		Curtis & Tompkins	9-4-90	11:16
Relinquished by				
Received by				
Relinquished by				
Received by				

NOTE: Samples are discarded 30 days after results are reported, unless other arrangements are made.
Hazardous samples will be returned to client or disposed of at client expense.

*AQ - Aqueous; NA - Nonaqueous; SL - Sludge; GW - Ground Water; SO - Soil; PE - Petroleum; OT - Other

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
1250 S. Boyle Ave., Los Angeles, CA 90023, Phone (213) 269-7421, Fax (213) 268-5328

DATE RECEIVED: 08/30/90
DATE REPORTED: 09/13/90

LAB NUMBER: 200529

CLIENT: LAW ENVIRONMENTAL, INC.

REPORT ON: SIX SOIL SAMPLES

PROJECT #: 58-0605

LOCATION: HAWKER PACIFIC

RESULTS: SEE ATTACHED

Reviewed By

Laboratory Director

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 200529
CLIENT: LAW ENVIRONMENTAL, INC.
PROJECT #: 58-0605
LOCATION: HAWKER PACIFIC

DATE RECEIVED: 08/30/90
DATE ANALYZED: 09/12/90
DATE REPORTED: 09/13/90

METHOD: EPA 8015 (MODIFIED)
EXTRACTABLE PETROLEUM HYDROCARBONS IN SOIL
EXTRACTION: DHS LUFT PROCEDURE

LAB ID	SAMPLE ID	GASOLINE (mg/Kg)	KEROSENE (mg/Kg)	DIESEL (mg/Kg)
1	B-2-5	ND (10)	ND (10)	ND (10)
2	B-2-20	ND (10)	ND (10)	ND (10)
3	B-2-30	ND (10)	ND (10)	ND (10)
4	B-2-40	ND (10)	ND (10)	ND (10)
5	B-3-10	ND (10)	ND (10)	ND (10)
6	B-3-20	ND (10)	ND (10)	ND (10)

ND = NOT DETECTED; PRACTICAL QUANTITATION LIMIT IN PARENTHESES.

QA/QC DATA SUMMARY:

Precision (Relative % Difference):	5
Accuracy (Spike % Recovery):	95

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 200529-1
CLIENT: LAW ENVIRONMENTAL, INC.
PROJECT #: 58-0605
SAMPLE ID: B-2-5

DATE RECEIVED: 08/30/90
DATE ANALYZED: 09/04/90
DATE REPORTED: 09/13/90

METHOD: EPA 8240
VOLATILE ORGANICS IN SOIL

COMPOUND		RESULT	PQL
		--ug/Kg--	
Chloromethane		ND	10
Bromomethane		ND	10
Vinyl chloride		ND	10
Chloroethane		ND	10
Methylene chloride		ND	5
Acetone		ND	10
Carbon disulfide		ND	5
Trichlorofluoromethane		ND	5
1,1-Dichloroethene		ND	5
1,1-Dichloroethane		ND	5
cis-1,2-Dichloroethene		ND	5
trans-1,2-Dichloroethene		ND	5
Chloroform		ND	5
Freon 113		ND	5
1,2-Dichloroethane		ND	5
2-Butanone		ND	10
1,1,1-Trichloroethane		ND	5
Carbon tetrachloride		ND	5
Vinyl acetate		ND	10
Bromodichloromethane		ND	5
1,2-Dichloropropane		ND	5
cis-1,3-Dichloropropene		ND	5
Trichloroethylene		ND	5
Dibromochloromethane		ND	5
1,1,2-Trichloroethane		ND	5
Benzene		ND	5
trans-1,3-Dichloropropene		ND	5
2-Chloroethylvinyl ether		ND	10
Bromoform		ND	5
2-Hexanone		ND	10
4-Methyl-2-pentanone		ND	10
1,1,2,2-Tetrachloroethane		ND	5
Tetrachloroethene	*	450	5
Toluene		70	5
Chlorobenzene		ND	5
Ethyl benzene		ND	5
Styrene		ND	5
Total xylenes		ND	5

QA/QC SUMMARY: SURROGATE RECOVERIES PQL = PRACTICAL QUANTITATION LIMIT

1,2-Dichloroethane-d4	98 %
Toluene-d8	110 %
Bromofluorobenzene	87 %

* NOTE 1:10 Dilution.

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 200529-2
CLIENT: LAW ENVIRONMENTAL, INC.
PROJECT #: 58-0605
SAMPLE ID: B-2-20

DATE RECEIVED: 08/30/90
DATE ANALYZED: 09/04/90
DATE REPORTED: 09/13/90

METHOD: EPA 8240
VOLATILE ORGANICS IN SOIL

COMPOUND	RESULT	PQL
	--ug/Kg--	
Chloromethane	ND	10
Bromomethane	ND	10
Vinyl chloride	ND	10
Chloroethane	ND	10
Methylene chloride	ND	5
Acetone	ND	10
Carbon disulfide	ND	5
Trichlorofluoromethane	ND	5
1,1-Dichloroethene	ND	5
1,1-Dichloroethane	ND	5
cis-1,2-Dichloroethene	ND	5
trans-1,2-Dichloroethene	ND	5
Chloroform	ND	5
Freon 113	ND	5
1,2-Dichloroethane	ND	5
2-Butanone	ND	10
1,1,1-Trichloroethane	ND	5
Carbon tetrachloride	ND	5
Vinyl acetate	ND	10
Bromodichloromethane	ND	5
1,2-Dichloropropane	ND	5
cis-1,3-Dichloropropene	ND	5
Trichloroethylene	ND	5
Dibromochloromethane	ND	5
1,1,2-Trichloroethane	ND	5
Benzene	ND	5
trans-1,3-Dichloropropene	ND	5
2-Chloroethylvinyl ether	ND	10
Bromoform	ND	5
2-Hexanone	ND	10
4-Methyl-2-pentanone	ND	10
1,1,2,2-Tetrachloroethane	ND	5
Tetrachloroethene	42	5
Toluene	18	5
Chlorobenzene	ND	5
Ethyl benzene	ND	5
Styrene	ND	5
Total xylenes	ND	5

QA/QC SUMMARY: SURROGATE RECOVERIES PQL = PRACTICAL QUANTITATION LIMIT

1,2-Dichloroethane-d4	107 %
Toluene-d8	103 %
Bromofluorobenzene	106 %

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 200529-3
CLIENT: LAW ENVIRONMENTAL, INC.
PROJECT #: 58-0605
SAMPLE ID: B-2-30

DATE RECEIVED: 08/30/90
DATE ANALYZED: 09/04/90
DATE REPORTED: 09/13/90

METHOD: EPA 8240
VOLATILE ORGANICS IN SOIL

COMPOUND	RESULT	PQL
	--ug/Kg--	
Chloromethane	ND	10
Bromomethane	ND	10
Vinyl chloride	ND	10
Chloroethane	ND	10
Methylene chloride	ND	5
Acetone	ND	10
Carbon disulfide	ND	5
Trichlorofluoromethane	ND	5
1,1-Dichloroethene	ND	5
1,1-Dichloroethane	ND	5
cis-1,2-Dichloroethene	ND	5
trans-1,2-Dichloroethene	ND	5
Chloroform	ND	5
Freon 113	ND	5
1,2-Dichloroethane	ND	5
2-Butanone	ND	10
1,1,1-Trichloroethane	ND	5
Carbon tetrachloride	ND	5
Vinyl acetate	ND	10
Bromodichloromethane	ND	5
1,2-Dichloropropane	ND	5
cis-1,3-Dichloropropene	ND	5
Trichloroethylene	ND	5
Dibromochloromethane	ND	5
1,1,2-Trichloroethane	ND	5
Benzene	ND	5
trans-1,3-Dichloropropene	ND	5
2-Chloroethylvinyl ether	ND	10
Bromoform	ND	5
2-Hexanone	ND	10
4-Methyl-2-pentanone	ND	10
1,1,2,2-Tetrachloroethane	ND	5
Tetrachloroethene	7	5
Toluene	10	5
Chlorobenzene	ND	5
Ethyl benzene	ND	5
Styrene	ND	5
Total xylenes	ND	5

QA/QC SUMMARY: SURROGATE RECOVERIES PQL = PRACTICAL QUANTITATION LIMIT

1,2-Dichloroethane-d4	103 %
Toluene-d8	101 %
Bromofluorobenzene	109 %

L-3

LAW/CRANDALL, INC.
ENGINEERING AND ENVIRONMENTAL SERVICES

April 6, 1993

Gibson, Dunn & Crutcher
333 South Grand Avenue
Los Angeles, California 90071-3197 (2701.20748)

Attention: Michael Monahan, Esq.

Subject: Summary of Findings
Environmental Assessment Work
Hawker Pacific
11310 Sherman Way
Sun Valley, California

INTRODUCTION

This letter summarizes the findings of environmental assessment work performed by Law Environmental and Law/Crandall, Inc. at the subject facility (Please note that Law Environmental and Law/Crandall consolidated west coast operations under the Law/Crandall name in 1992). The purpose of the assessment work was to evaluate the potential presence of contaminants in subsurface soils. The majority of the work was performed under the oversight of the Regional Water Quality Control Board (RWQCB) as part of the AB1803 Well Investigation Program. This report also summarizes the findings of an underground tank assessment performed by Active Leak Testing, Inc., for Hawker Pacific in June 1990; the report of that assessment was provided to us by Hawker Pacific.

The professional opinions presented in this letter have been developed using that degree of care and skill ordinarily exercised, under similar circumstances, by reputable environmental consultants practicing in this or similar localities. No other warranty, expressed or implied, is made as to the professional advice included in this letter.

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LOS ANGELES, CA 90040-1554

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ONE OF THE LAW COMPANIES

This letter summarizes information previously presented in the following assessment reports:

- Report of Subsurface Investigation, AB1803 Follow-up Program, Law Environmental, January 4, 1989.
- Report of Environmental Assessment, Private Sewage Disposal System and Industrial Waste Clarifier, August 10, 1989.
- Report of Additional Subsurface Investigation, Private Sewage Disposal System and Industrial Waste Clarifier, Law Environmental, January 11, 1990.
- Underground Storage Tank Assessment, Active Leak Testing, Inc., June 1990.
- Subsurface Soil Investigation, Sump and Underground Storage Tank Locations, Law Environmental, November 26, 1990.
- Underground Storage Tank and Sump Removal, Law Environmental, July 17, 1992.
- Summary Letter, Environmental Assessment Work, Law/Crandall, Inc., December 1992.

The findings of these assessments are discussed below with reference to various on-site areas that were assessed. This letter also presents data on the depth to ground water in the site vicinity over time, based on public information from local water supply wells.

FINDINGS OF PREVIOUS ASSESSMENTS BY AREA

Outside Storage Areas

Three borings, 88B-1, 88B-2, and 88B-3, were drilled adjacent to outside storage areas during an AB1803 assessment conducted in December 1988 by Law Environmental. The borings were completed to a depth of 10 feet. The boring locations are shown on Figure 1. One boring (88B-1) was located at the south of Building 2 next to chemical storage sheds. The other two borings (88B-2 and 88B-3) were located south of Building 5 near an aboveground waste oil tank and the flammable liquid shed. Soil samples were collected at depths of 1, 5, and 10 feet and analyzed by Brown and Caldwell Laboratories for volatile organic compounds by EPA Method 8240.

No volatile organic compounds were detected at or above the laboratory detection limits except for methylene chloride, which was detected in low concentrations, 5 to 16 micrograms per kilogram (μg/kg), in all the soil samples analyzed. It was subsequently determined by the analytical laboratory that the methylene chloride was a laboratory contaminant.

Private Sewage Disposal Systems

In May 1989, Law Environmental Inc. drilled two 40-foot borings, 89B-1 and 89B-2, near each of the two private sewage disposal systems (PSDS). The boring locations are shown on Figure 2. Soil samples were collected at 5-foot intervals and analyzed by West Coast Analytical Service, Inc., for volatile organic compounds by EPA Methods 8010/8020.

No volatile organic compounds were detected in the samples at or above the laboratory detection limits except toluene. Toluene was detected in the soil samples from both borings, with a maximum concentration of 120 μg/kg in the 10-foot sample from

Boring B-2. This concentration is below the California action level of 300 μg/kg for soil (California State Water Resources Control Board, 1991). Table 1A summarizes the toluene concentrations detected.

In December 1989, Law Environmental Inc. drilled two 80-foot borings, 89B1-D and 89B2-D, adjacent to the two private sewage disposal systems. The boring locations are shown on Figure 2. Soil samples were collected at 5-foot intervals beginning at a depth of 45 feet. The 50-, 60-, 70- and 80-foot samples were submitted to West Coast Analytical Service, Inc., for analyses of volatile organic compounds (EPA Methods 8010/8020). Laboratory analyses of the soil samples collected from the 80-foot borings drilled adjacent to the two PSDS systems did not indicate the presence of volatile organic compounds at or above the laboratory detection limits. The data is summarized on Table 1B.

Industrial Waste Clarifier

In May 1989, Law Environmental Inc. drilled two borings, CB-1 and CB-2, adjacent to an industrial waste clarifier in Building 2 to a depth of 6.5 feet. The boring locations are shown on Figure 3. Samples were collected at depths of 2.5 and 6.5 feet and analyzed by West Coast Analytical Service, Inc., for volatile organic compounds by EPA Method 8010/8020. Low concentrations of toluene and tetrachloroethane (PCE) were detected in the samples. The maximum toluene concentration detected was 28 μg/kg in the 6.5-foot sample from Boring CB-1, while the maximum PCE concentration was 7 μg/kg in the 6.5-foot sample from Boring CB-2. Table 2 summarizes the detected toluene and PCE concentrations.

In December 1989, Law Environmental drilled one additional boring, CB-1D, terminated at a depth of 40 feet, at the location of the industrial waste clarifier in Building 2 (Figure 3). Soil samples were collected from this boring at 5-foot intervals beginning at a depth of 10 feet and analyzed by West Coast Analytical Service for volatile organic

compounds by EPA Methods 8010/8020. Toluene was detected at 4.2 μg/kg in the 35-foot sample collected from this boring. However, toluene was detected in the laboratory blank samples. No other volatile organic compounds were detected in any of the soil samples collected from this boring. Table 2 summarizes the toluene and PCE analytical results.

Underground Tank/Sump Area

In June 1990, a preliminary subsurface investigation was conducted between Buildings 1 and 2 by Active Leak Testing, Inc. (ALT), to assess the potential presence of soil contamination from a 280-gallon single-wall steel underground tank and a small concrete-lined sump located east of the tank. The tank and sump were located beneath a 5-inch concrete slab and bermed area between Buildings 1 and 2. Both the tank and sump were present on site prior to Hawker Pacific's occupancy and were not used by Hawker Pacific. ALT drilled two soil borings (AB-1 and AB-2) adjacent to the underground tank and one soil boring (AB-3) adjacent to the sump. Figure 4 shows the location of the sump, UST and borings. Borings AB-1 and AB-2 were slant drilled to a depth of 20 feet. Boring AB-3 was slant-drilled to a depth of 15 feet. The samples collected from Borings AB-1 and AB-2 at depths of 15 and 20 feet and samples collected from AB-3 at depths of 1, 3, 5, 10, and 15 feet were analyzed by Diversified Analytical Services for total recoverable petroleum hydrocarbons (TRPH) using EPA Method 418.1. The sample collected from AB-3 at 5 feet was also analyzed for volatile organic compounds (VOCs) using EPA Method 8240. Laboratory analyses of soil samples collected during the investigation detected the presence of petroleum hydrocarbons and VOCs in soils adjacent to the sump and tank. Table 3 presents a summary of the detected constituents and their concentrations.

In August, 1990, Law Environmental conducted a comprehensive subsurface assessment to delineate the vertical and horizontal extent of soil contamination at the site. During the assessment, we drilled seven soil borings (B-1 through B-7) adjacent to the tank and

sump area, as shown on Figure 4. B-1 was drilled to a depth of 80 feet, B-2 was drilled to a depth of 40 feet, B-5 was drilled to a depth of 25 feet and Borings B-3, B-4, B-6 and B-7 were drilled to a depth of 20 feet. Soil samples were collected from the borings at 5-foot intervals. Soil samples selected by field screening methods (OVA readings and field observations) were analyzed by Curtis and Tompkins, Ltd. Laboratory for total petroleum hydrocarbons (TPH) (as gasoline) and VOCs using EPA Methods 8015 and 8240, respectively.

Elevated levels of diesel-range hydrocarbons were detected in the 5-foot soil sample analyzed from Boring B-5, drilled adjacent to the sump. Elevated levels of PCE were detected in the 5-foot soil sample collected from Boring B-2, drilled adjacent to the tank. Elevated levels of PCE and other VOCs were detected in the 5-foot soil sample collected from Boring B-5, drilled next to the sump. The concentrations of the VOCs and the petroleum hydrocarbons decreased to low levels or were not detected with depth. Table 4 presents a summary of laboratory results for the assessment. Figures 5 and 6 present east-west and north-south cross sections, respectively, that show the vertical distribution of soil contamination.

The sump and tank were removed in August of 1991. A hole in the bottom of the tank was discovered during tank removal. After the tank was removed from the excavation, we collected one soil sample beneath the tank and one soil sample from the soil stockpile at the direction of the City of Los Angeles Fire Department (LAFD) inspector. The soil samples were analyzed by Curtis and Tompkins, Ltd., Laboratory for TPH and VOCs using EPA Methods 418.1 and 8240, respectively. The presence of TPH and low levels of PCE were detected in the two samples TP-1 and SP-1. Table 5 summarizes the detected constituents and their concentrations. The location of the sample collected below the tank is shown on Figure 4. Following tank removal, the stockpiled soil was used to backfill the excavation.

In the tank closure report, we recommended installing a Vapor Extraction System (VES) to remediate the contaminated soils at the site. On June 1, 1992, following Los Angeles City Fire Department approval of our proposed remedial action, we began installation of the VES. Four vapor extraction wells (VW-1, VW-2, VW-3 and VW-4) were installed to a depth of 25 feet at the locations shown on Figure 4. Soil samples were collected at depths of 10 and 20 feet from each of the well borings. The samples were analyzed by American Analytics for VOCs using EPA Method 8240. The results of the laboratory analysis indicated a low concentration of PCE in the soil sample collected from VW-2 at a depth of 10 feet. VOCs were not detected in the other samples. Table 6 presents a summary of the laboratory results for PCE in soil samples. The results are also shown on the east-west cross section, Figure 5.

On June 18, 1992, the LAFD notified Law/Crandall that the RWQCB was assuming the lead agency status for the project. Law/Crandall received a letter from the RWQCB dated July 14, 1992 indicating that we should not commence work on site until a revised workplan was reviewed and approved. Law/Crandall suspended work at the site pending RWQCB approval of our revised work plan.

DEPTH TO GROUND WATER DATA

In September 1992, we researched depth to ground water levels in wells monitored by the Department of Public Works Hydraulic/Water Conservation Division. The wells are owned by the Los Angeles Flood Control District and by private parties and are generally used for observation or for public supply.

There are approximately 15 wells within one mile of Hawker Pacific with available depth to water information. The hydrographs for four of the wells are presented on Figures 8 through 11. Figure 7 shows the location of the four wells. The hydrographs were created by plotting the depth to water in a well against the date the measurement was taken. Measurements taken in the spring were used when available.

Depth to water measurements in the four wells are shown between 1960 and 1992. The depth to water generally increased after 1960 to a maximum depth of about 260 feet in the late 1960s. After that, depth to water fluctuated between about 210 and 240 feet until about 1977, when depth to water dropped back down to about 250 - 260 feet. Depth to water decreased to about 190 feet in 1982. Depth to water is currently 230 to 270 feet.

CONCLUSIONS

Based on the results of our assessments, we found no evidence that chlorinated solvent soil contamination is present at this facility below a depth of 30 feet.

Elevated levels of chlorinated solvents were detected in four of fifteen soil samples obtained from the 5-foot interval of borings drilled in the area of the former underground tank and sump, between Buildings 1 and 2. However, soil samples analyzed from deeper intervals in the borings showed a dramatic and significant decrease in solvent concentrations. This pattern indicates that the spill had a limited vertical migration.

Based on our assessment, we estimate the volume of impacted soil requiring remediation to be approximately 410 cubic yards. This material is limited to the 0- to 20-foot interval. The geometry of the plume is not indicative of a persistent or continuous leak over an extended period of time, but an isolated surficial or near-surface release which did not have significant horizontal or vertical migration.

Based on the estimated volume of impacted soil and the detected PCE concentrations (up to 555,000 μg/kg), our calculations estimate that the impacted soil contains about 1,700 grams (about 4 pounds) of PCE. According to Hawker Pacific, Inc., personnel, Hawker Pacific has not used, stored, or disposed of PCE-containing solvents at this facility during their lease. It is our understanding that Hawker Pacific has occupied the site since about 1987.

During at least the past 17-year period, the surface of the tank and sump area has reportedly been covered with a 5-inch-thick concrete paving. The concrete surface barrier would have significantly retarded the downward infiltration and percolation of rainwater or other fluids, that would have potentially carried solvents downward to the underlying ground water. A review of approximately 30 years of ground water level information from the surrounding LAFCD wells indicates that ground water has been at depths greater than 150 feet below ground surface throughout this time period. This is about 130 feet below the PCE-impacted soil delineated by our assessments.

It is therefore our opinion that there is no evidence that the chlorinated solvent soil contamination in the areas we assessed has contributed to the regional ground water contamination.

-o0o-

If you have any questions or if we can be of further assistance, please do not hesitate to call our office at (213) 889-5300.

Sincerely,

LAW/CRANDALL, INC.

Juli G. Oborne, R.G. 5072
Senior Environmental Geologist

Herbert M. Spitz, C.E.G. 1603
Senior Geologist

Daniel T. Elliott R.G. 4129
Remediation Services Manager
Principal Geologist

DEPT-701\20748.RPT\MAE
(3 copies submitted)
Attachments:
Tables
Figures

TABLE 1A

Concentration of Toluene in μg/kg in Soil Samples (PSDS Borings), May 1989

Depth (in feet)	Boring 89B-1	Boring 89B-2
5	9	19
10	110/15*	120/13
15	32	47
20	33/18	31/10
25	57	12
30	14/16	44/12
35	14	53
40	11/5	17/ND

Notes:

* = Values after the slash (/) are from data collected by RWQCB personnel.
ND = Not detected, detection limit 5 μg/kg.
California action level for Toluene in soil = 300 μg/kg (California State Water Resources Control Board, 1991).

TABLE 1B

Results of Laboratory Analyses of Soil Samples from Law Environmental Assessment, December 1989

Sample No. and Depth (Feet)	PCE (µg/kg)	Toluene (µg/kg)	TCE (µg/kg)	1,1,1-TCA (µg/kg)	1,1-DCE (µg/kg)
89B1-D-50	ND <1.5	ND <1	ND <1.5	ND <1.5	ND <2
89B1-D-60	ND <1.5	ND <1	ND <1.5	ND <1.5	ND <2
89B1-D-70	ND <1.5	ND <1	ND <1.5	ND <1.5	ND <2
89B1-D-80	ND <1.5	ND <1	ND <1.5	ND <1.5	ND <2
89B2-D-50	ND <1.5	ND <1	ND <1.5	ND <1.5	ND <2
89B2-D-60	ND <1.5	ND <1	ND <1.5	ND <1.5	ND <2
89B2-D-70	ND <1.5	ND <1	ND <1.5	ND <1.5	ND <2
89B2-D-80	ND <1.5	ND <1	ND <1.5	ND <1.5	ND <2

Notes:

TCE = Trichloroethene
PCE = Tetrachloroethene
1,1,1-TCA = 1,1,1-Trichloroethane
1,1-DCE = 1,1-Dichloroethene
1,1-DCA - 1,1-Dichloroethene
ND <5 = Not detected, detection limit noted.
µg/kg = micrograms per kilogram.

TABLE 2

Concentrations of Toluene and Tetrachloroethene (PCE) in Soil Samples from Clarifier Borings, May 1989

Sample No. and Depth (Feet)	Toluene (μg/kg)*	PCE (μg/kg)
CB-1-2½	14	3
CB-1-6½	28	4
CB-2-2½	ND<5	ND<5
CB-2-6½	1	7
CB-1D-10	ND <1	ND <1.5
CB-1D-15	ND <1	ND <1.5
CB-1D-20	ND <1	ND <1.5
CB-1D-25	ND <1	ND <1.5
CB-1D-30	ND <1	ND <1.5
CB-1D-35	4.2	ND <1.5
CB-1D-40	ND <1	ND <1.5

Notes:

ND = Not detected, detection limit shown.
PCE = Tetrachloroethene.
μg/kg = Micrograms per kilogram.
* = Toluene was detected in three laboratory blank samples at concentrations of 1 to 2 μg/kg.

TABLE 3

Results of Laboratory Analyses of Soil Samples From ALT Report, June 1990

Sample No. and Depth (feet)	TRPH (mg/kg)	1,1,1-TCA (µg/kg)	TCE (µg/kg)	Toluene (µg/kg)	PCE (µg/kg)	Total Xylene (µg/kg)
AB-1-15	36.3	NT	NT	NT	NT	NT
AB-1-20	36.3	NT	NT	NT	NT	NT
AB-2-15	220	NT	NT	NT	NT	NT
AB-2-20	136	NT	NT	NT	NT	NT
AB-3-1	38,637	NT	NT	NT	NT	NT
AB-3-3	22,251	NT	NT	NT	NT	NT
AB-3-5	3,245	6.6	19.2	550,000	555,000	584
AB-3-10	17,104	NT	NT	NT	NT	NT
AB-3-15	354	NT	NT	NT	NT	NT

Notes:

TRPH = Total Recoverable Petroleum Hydrocarbons
1,1,1-TCA = 1,1,1-Trichloroethane
TCE = Trichloroethene
PCE = Tetrachloroethene
NT = Not Tested
mg/kg = milligrams per kilogram.
µg/kg = micrograms per kilogram.

TABLE 4

Results of Laboratory Analyses of Soil Samples From Law Environmental Assessment, August 1990

Sample No. and Depth (feet)	PCE (μg/kg)	Toluene (μg/kg)	TCE (μg/kg)	1,1,1-TCA (μg/kg)	1,1-DCE (μg/kg)	1,1-DCA (μg/kg)	Diesel (mg/kg)
B-1-9	ND <5	4	ND <5	ND <5	ND <5	ND <5	NT
B-1-29	ND <5	8	ND <5	ND <5	ND <5	ND <5	NT
B-1-49	ND <5	5	ND <5	ND <5	ND <5	ND <5	NT
B-1-69	ND <5	8	ND <5	ND <5	ND <5	ND <5	NT
B-1-74	ND <5	4	ND <5	ND <5	ND <5	ND <5	ND <10
B-2-5	450	70	ND <5	ND <5	ND <5	ND <5	ND <10
B-2-20	42	18	ND <5	ND <5	ND <5	ND <5	ND <10
B-2-30	7	10	ND <5	ND <5	ND <5	ND <5	ND <10
B-2-40	ND <5	ND <5	ND <5	ND <5	ND <5	ND <5	ND <5
B-3-10	21	18	ND <5	ND <5	ND <5	ND <5	ND <10
B-3-20	20	25	ND <5	ND <5	ND <5	ND <5	ND <10
B-4-5	370	40	ND <5	ND <5	ND <5	ND <5	110*
B-4-20	26	14	ND <5	ND <5	ND <5	ND <5	ND <10
B-5-5	130,000	150	260	290	42	28	7300*
B-5-25	16		ND <5	ND <5	ND <5	ND	88*
B-6-20	ND <5	ND <5	ND <5	ND <5	ND <5	ND <5	ND <10
B-7-5	ND <5	13	ND <5	ND <5	ND <5	ND <5	ND <10
B-7-20	ND <5	ND <5	ND <5	ND <5	ND <5	ND <5	ND <10

Notes:
TCE = Trichloroethene
PCE = Tetrachloroethene
1,1,1-TCA = 1,1,1-Trichloroethane
1,1-DCE = 1,1-Dichloroethene
1,1-DCA = 1,1-Dichloroethene
ND <5 = Not detected, detection limit noted
NT = Not Tested
* = Hydrocarbons in diesel range, did not match standards
μg/kg = micrograms per kilogram.

TABLE 5

Results of Laboratory Analyses for Soil Samples Collected During Tank Removal, August 1991

Sample	TPH (mg/kg)	PCE (µg/kg)
T-1	230	18
SP-1	250	7

Notes: TPH = Total Petroleum Hydrocarbons.
PCE = Tetrachloroethene.
µg/kg = Micrograms per kilogram.
mg/kg = milligrams per kilogram.

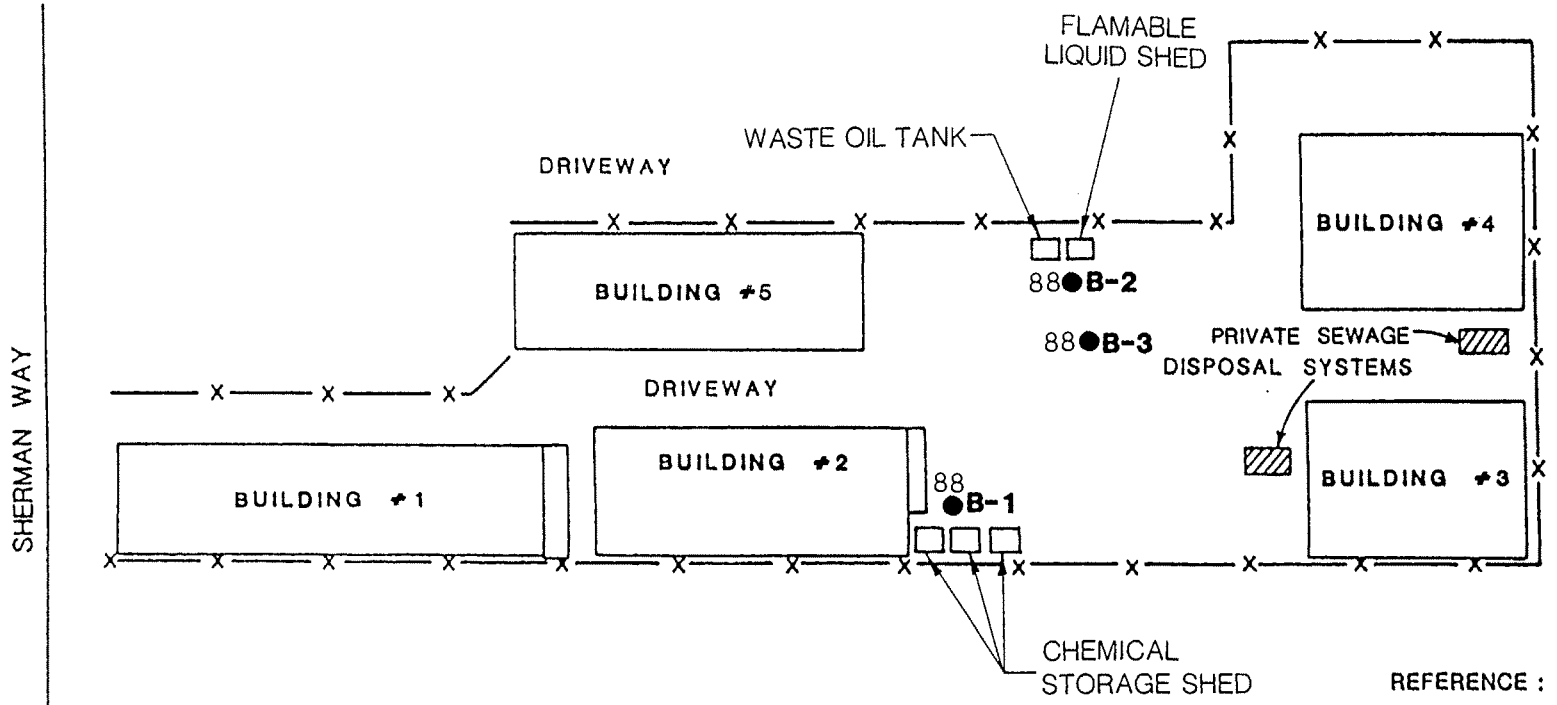
TABLE 6

Results of Laboratory Analyses for PCE from Soil Samples Collected during Vapor Well Installation

Well No. and Depth (Feet)	PCE (μg/kg)
VW-1-10	ND <5
VW-1-20	ND <5
VW-2-10	31
VW-2-20	ND <5
VW-3-10	ND <5
VW-3-20	ND <5
VW-4-10	ND <5
VW-4-20	ND <5

Notes: μg/kg = micrograms per kilogram.
ND = Not detected, detection limit shown.

FORM 120 JOB 2-20-006 DATE 3-5/ DR. N CHKD.



REFERENCE : BASE MAP BY HAWKER PACIFIC

LEGEND:

88●B-1 BORING LOCATION (12/88)

OUTSIDE STORAGE AREAS

SITE MAP

HAWKER PACIFIC

N

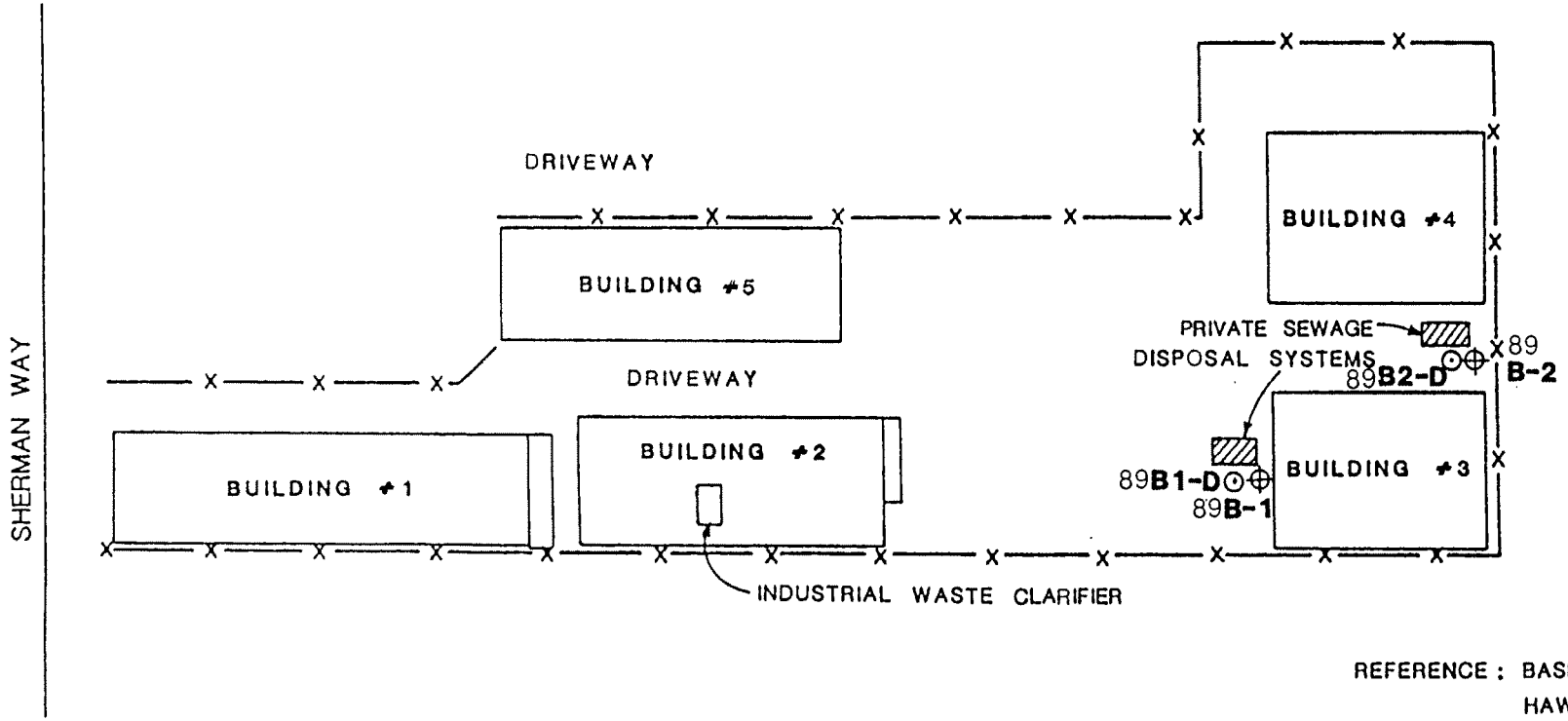
0 115

FEET

(APPROX.)

LAW/CRANDALL, INC.

FIGURE 1



REFERENCE : BASE MAP BY HAWKER PACIFIC

LEGEND

89B-1⊙ BORING LOCATION (12/89)

89B-1D⊕ BORING LOCATION (05/89)

PRIVATE SEWAGE DISPOSAL SYSTEM
SITE MAP

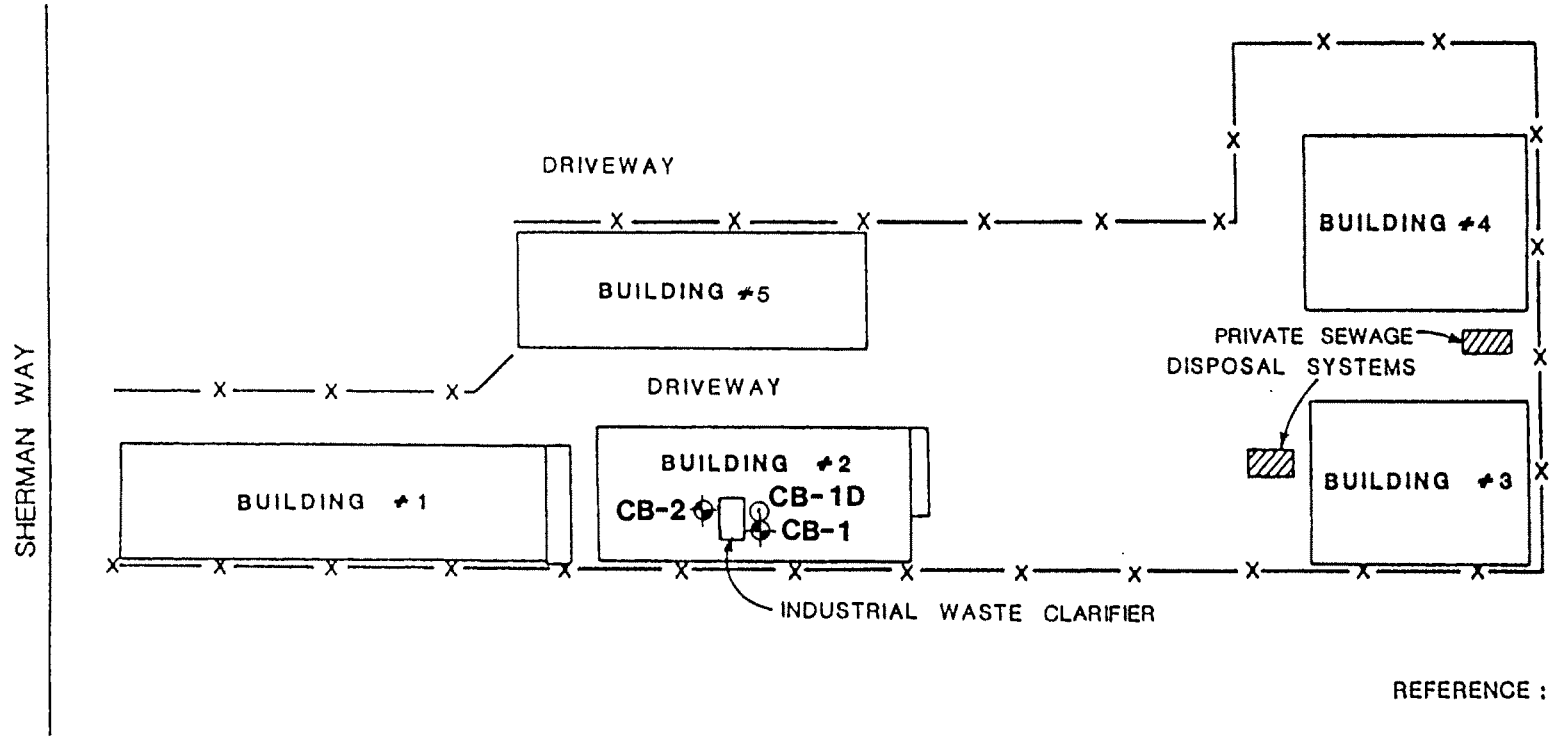
HAWKER PACIFIC

N

0 115
FEET
(APPROX.)

LAW CRANDALL, INC.

FIGURE 2



REFERENCE : BASE MAP BY HAWKER PACIFIC

LEGEND

CB-1D⊙ BORING LOCATION

CB-2 ⌖ BORING LOCATION (05/89)

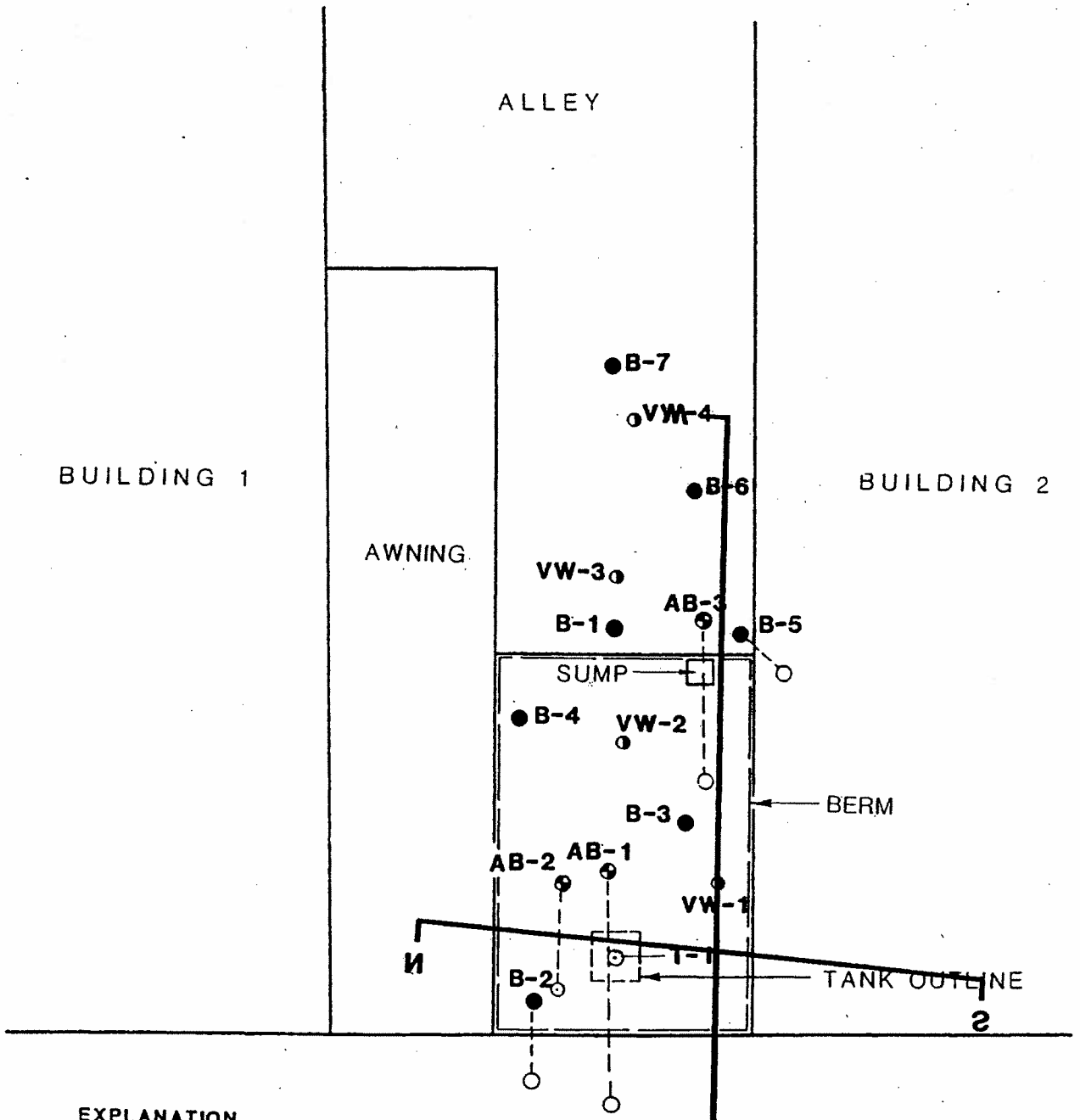
BUILDING #2 CLARIFIER
SITE MAP

HAWKER PACIFIC

0 115
FEET
(APPROX.)

LAW/CRANDALL, INC.

FIGURE 3



EXPLANATION

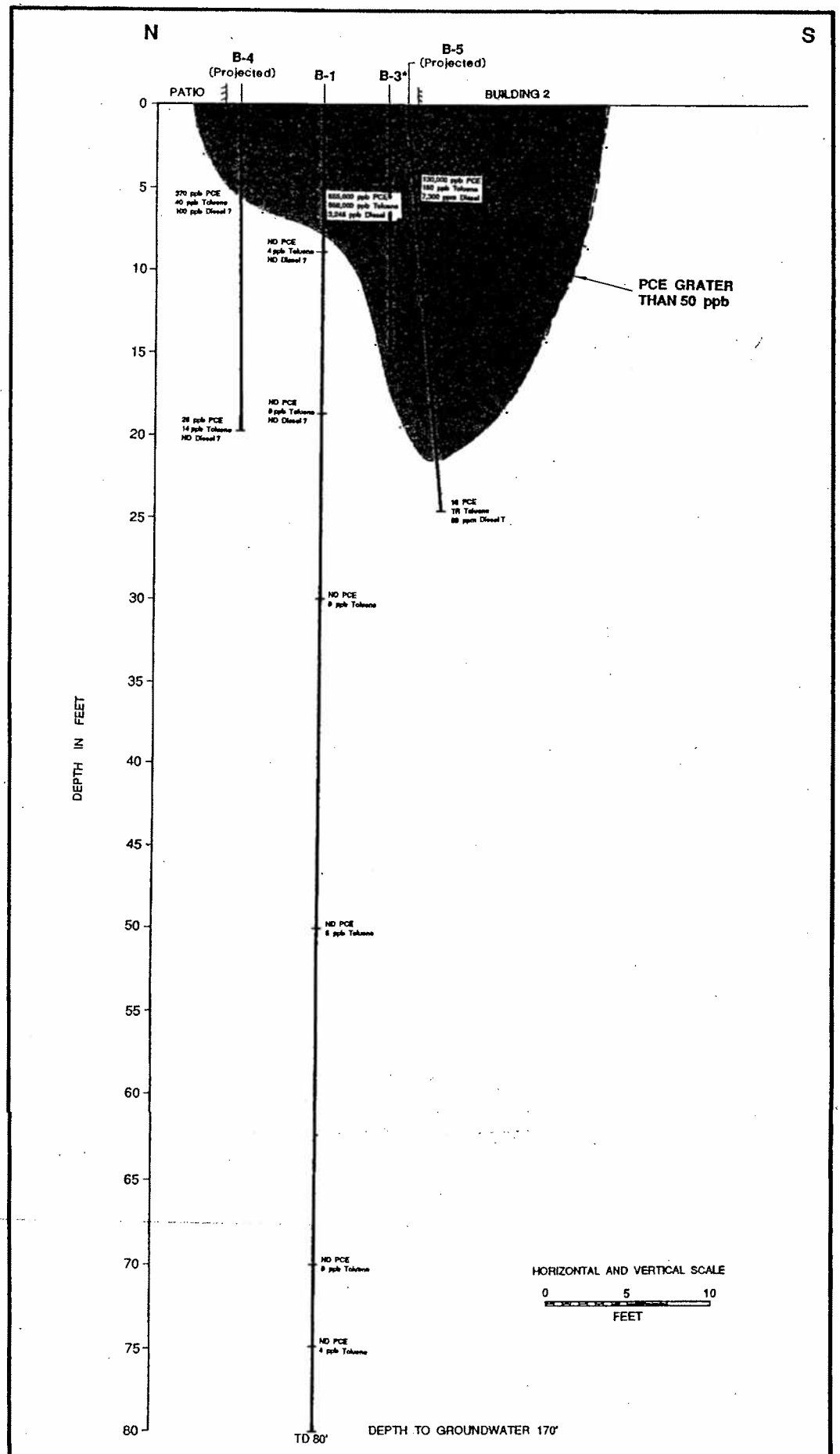
- B-7 ● BORING LOCATION AND NUMBER
- ○ BOTTOM HOLE LOCATION
- AB-3 ◑ BORING FROM ALT INVESTIGATION
- T-1 ⊙ SAMPLE LOCATION AFTER TANK REMOVAL
- VW-1 ◑ VAPOR WELL LOCATION AND NUMBER

UNDERGROUND STORAGE TANK / SUMP AREA
SITE MAP

SCALE 1"= 10'

LAW/CRANDALL, INC.

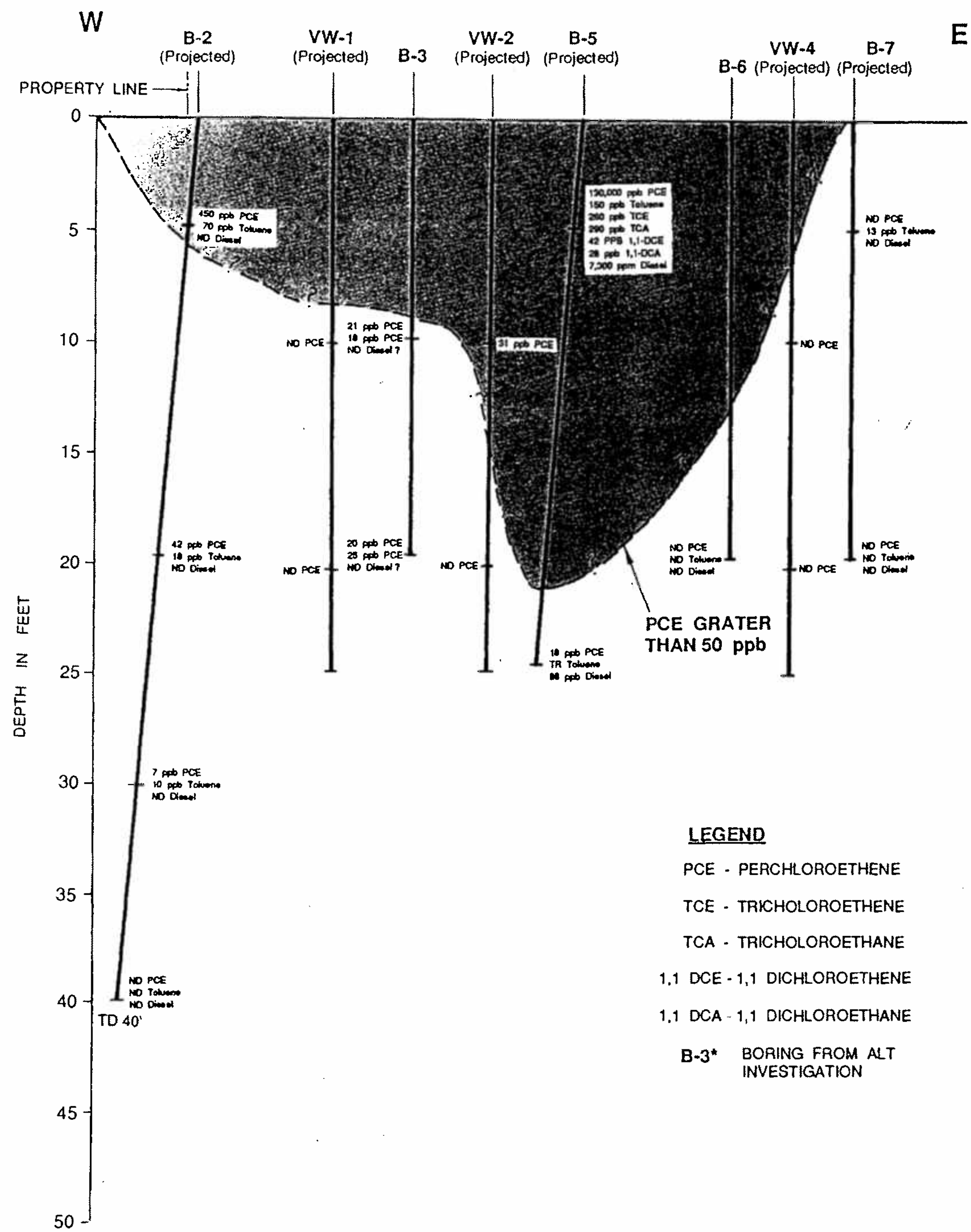
FIGURE 4



NORTH - SOUTH CROSS SECTION

HAWKER PACIFIC
SUN VALLEY, CALIFORNIA

FIGURE 6



EAST - WEST CROSS SECTION

HAWKER PACIFIC
SUN VALLEY, CALIFORNIA

HORIZONTAL AND VERTICAL SCALE

0 5 10

FEET

KEY:

3820B ● WELL LOCATION AND NUMBER

WELL LOCATION MAP

N

1/2 1

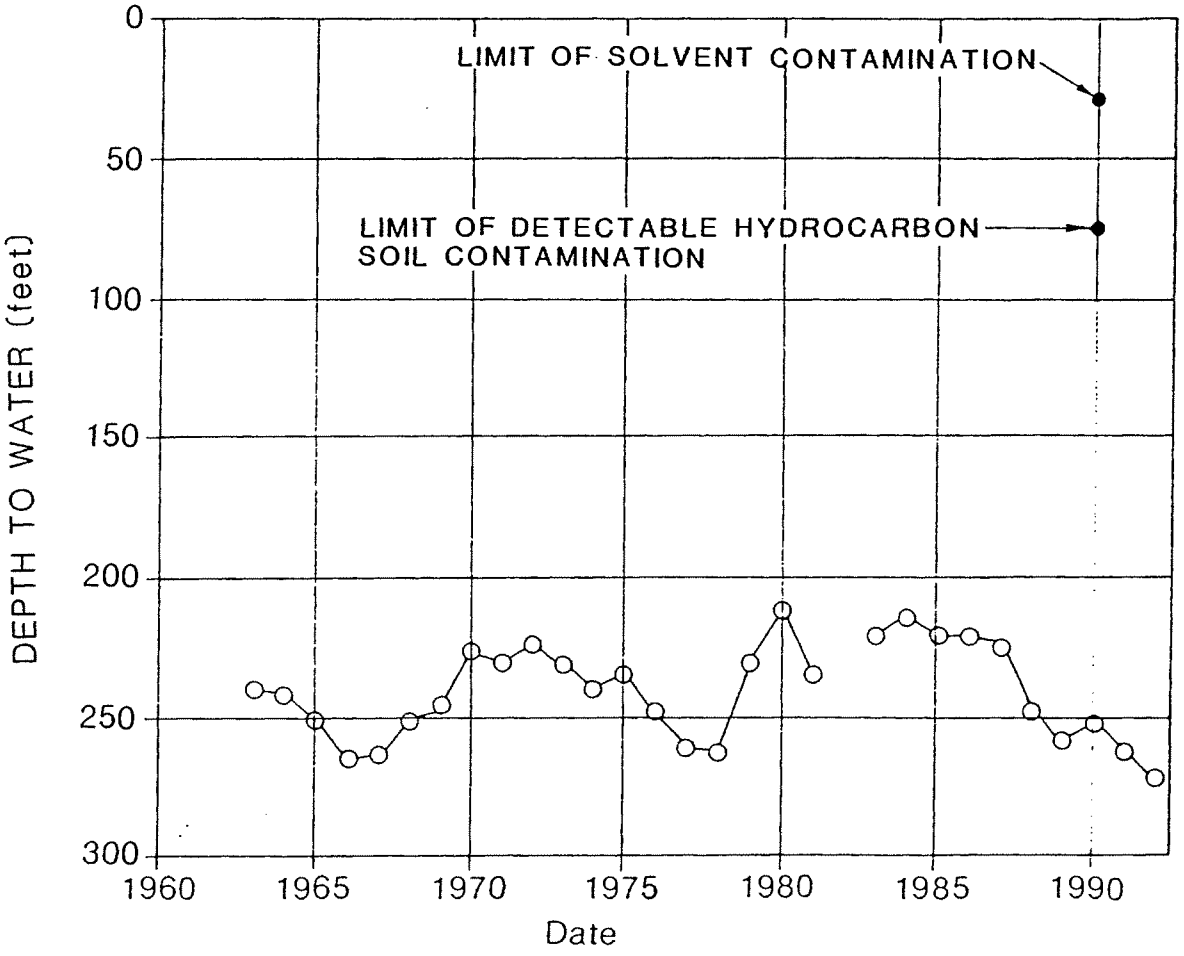
MILE

REFERENCE:
THE THOMAS GUIDE, THOMAS BROS. MAP, LOS ANGELES/ ORANGE COUNTY MAP, PAGE 17, 1987 EDITION.

LAW/CRANDALL, INC.

FIGURE 7

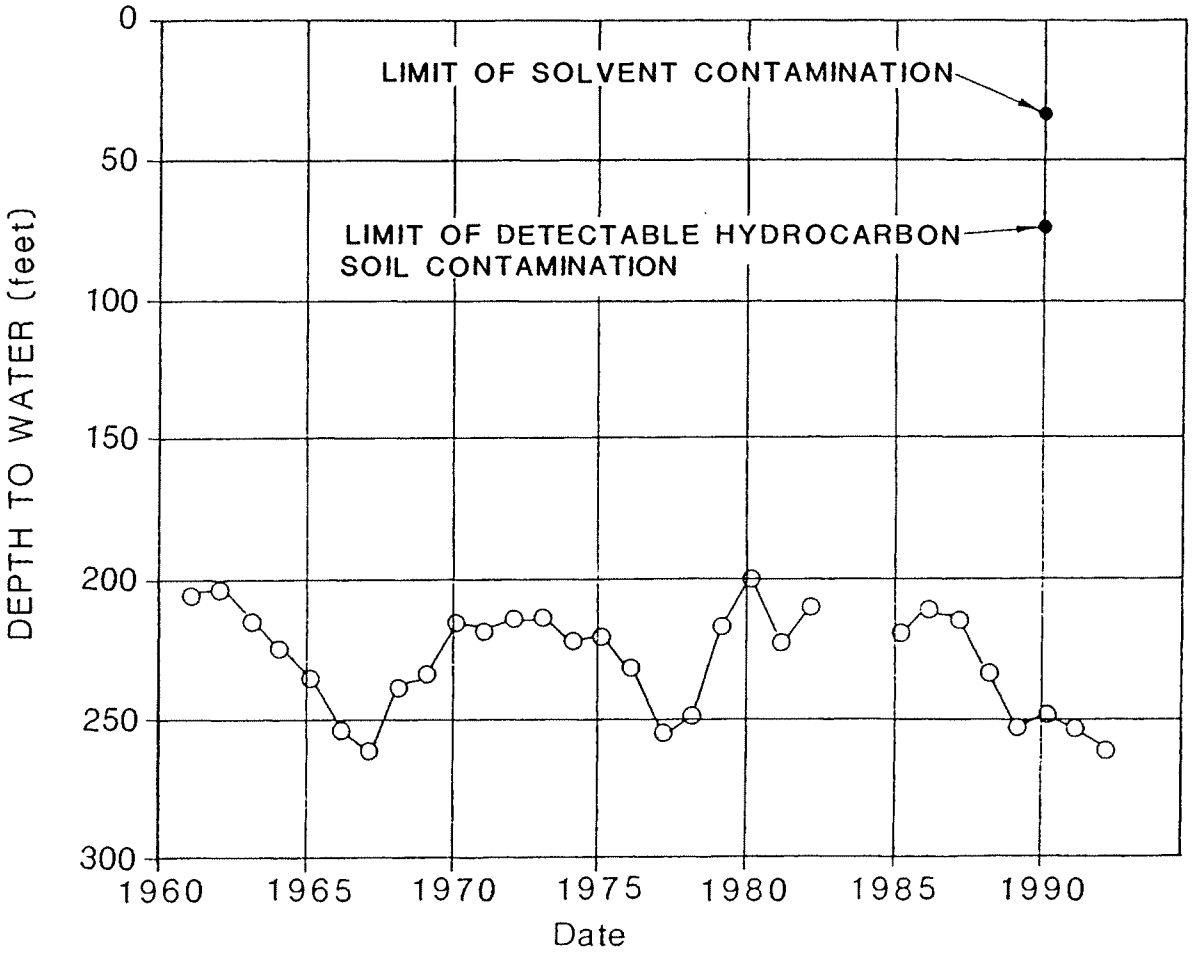
Well No. 4929



HAWKER PACIFIC
LAW/CRANDALL, Inc. Project No. 2701.20748

FIGURE 8

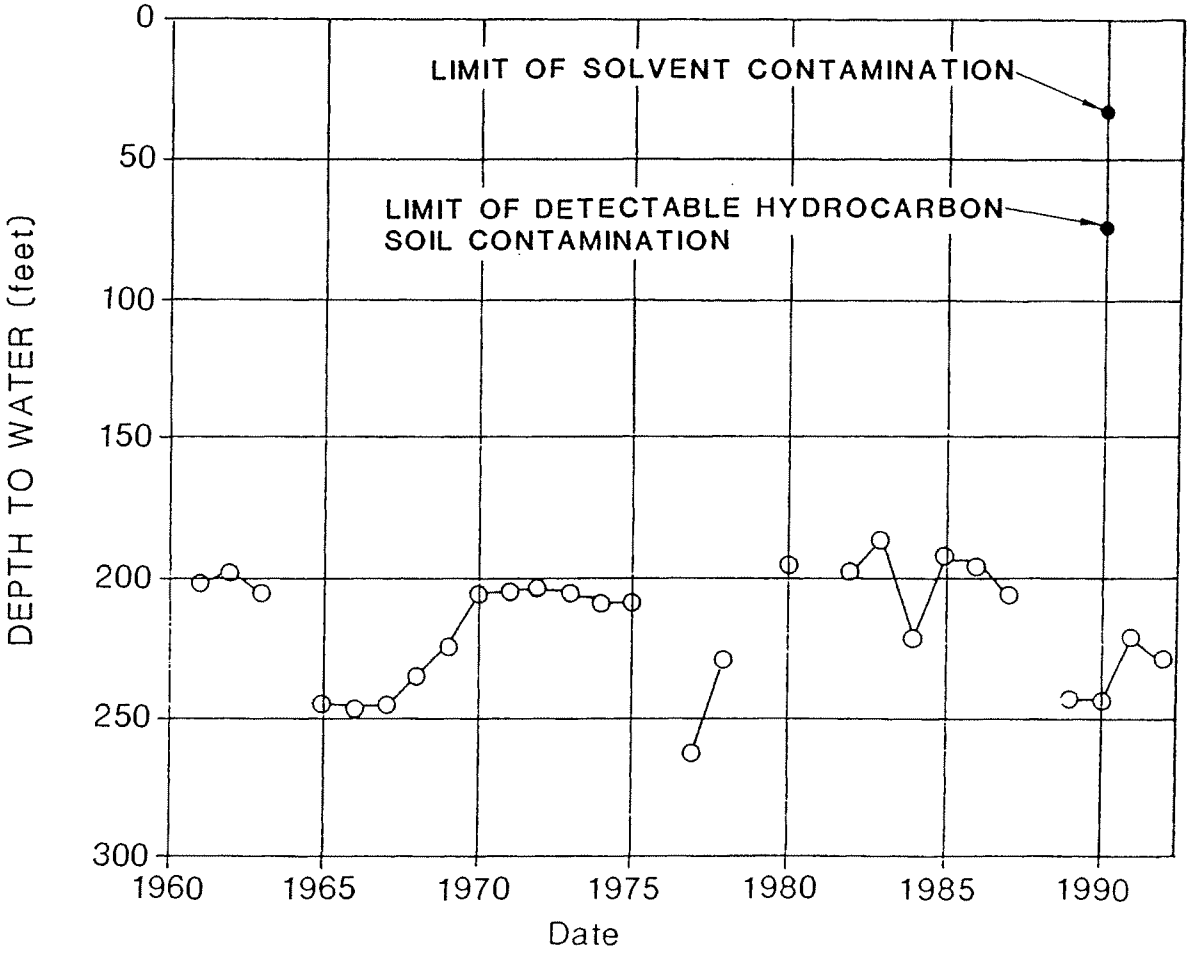
Well No. 3800A



HAWKER PACIFIC
LAW/CRANDALL, Inc. Project No. 2701.20748

FIGURE 9

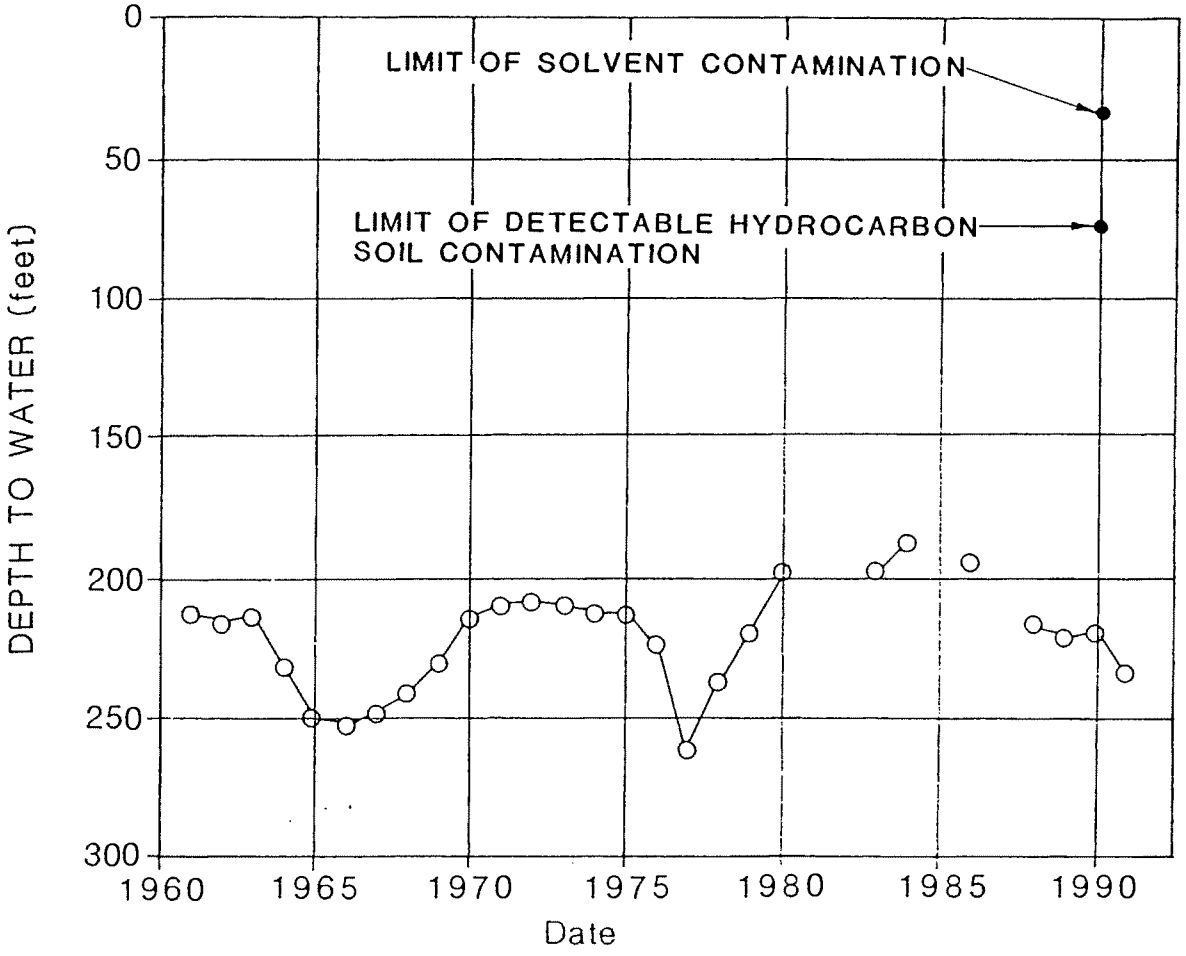
Well No. 3810A



HAWKER PACIFIC
LAW/CRANDALL, Inc. Project No. 2701.20748

FIGURE 10

Well No. 3820B



HAWKER PACIFIC
LAW/CRANDALL, Inc. Project No. 2701.20748

FIGURE 11

AMERICAN ANALYTICS

LABORATORY ANALYSIS RESULTS

Client: Law Environmental
Project No.: 58-1569
Project Name: Hawker Pacific
Sample Matrix: Soil
Method: EPA 8240

AA Project No.: A14006
Date Sampled: 6/1,2/92
Date Received: 6/2/92
Date Analyzed: 6/6/92
Units: µg/kg (ppb)
Date Reported: 6/12/92

Compounds	AAID # / Client ID #	9354 VW1-10	9355 VW1-20	9356 VW2-10	9357 VW2-20	9358 VW3-10	Detection Limits
Chloromethane		ND	ND	ND	ND	ND	5
Vinyl chloride		ND	ND	ND	ND	ND	5
Bromomethane		ND	ND	ND	ND	ND	5
Chloroethane		ND	ND	ND	ND	ND	5
Trichlorofluoromethane		ND	ND	ND	ND	ND	5
Acetone		ND	ND	ND	ND	ND	50
1,1-Dichloroethene		ND	ND	ND	ND	ND	5
Carbon disulfide		ND	ND	ND	ND	ND	5
Methylene chloride		ND	ND	ND	ND	ND	5
trans-1,2-Dichloroethene		ND	ND	ND	ND	ND	5
1,1-Dichloroethane		ND	ND	ND	ND	ND	5
2-Butanone		ND	ND	ND	ND	ND	50
Chloroform		ND	ND	ND	ND	ND	5
1,1,1-Trichloroethane		ND	ND	ND	ND	ND	5
Carbon tetrachloride		ND	ND	ND	ND	ND	5
1,2-Dichloroethane		ND	ND	ND	ND	ND	5
Bromodichloromethane		ND	ND	ND	ND	ND	5
Benzene		ND	ND	ND	ND	ND	5
Trichloroethene		ND	ND	ND	ND	ND	5
1,2-Dichloropropane		ND	ND	ND	ND	ND	5
trans-1,3-Dichloropropene		ND	ND	ND	ND	ND	5
cis-1,3-Dichloropropene		ND	ND	ND	ND	ND	5
1,1,2-Trichloroethane		ND	ND	ND	ND	ND	5
Dibromochloromethane		ND	ND	ND	ND	ND	5
Bromoform		ND	ND	ND	ND	ND	5
4-Methyl-2-pentanone		ND	ND	ND	ND	ND	50
Toluene		ND	ND	ND	ND	ND	5
2-Hexanone		ND	ND	ND	ND	ND	50
Tetrachloroethene		ND	ND	31	ND	ND	5
Chlorobenzene		ND	ND	ND	ND	ND	5
Ethylbenzene		ND	ND	ND	ND	ND	5
m,p-Xylenes		ND	ND	ND	ND	ND	5
o-Xylene		ND	ND	ND	ND	ND	5
Styrene		ND	ND	ND	ND	ND	5
1,1,2,2-Tetrachloroethane		ND	ND	ND	ND	ND	5
1,3-Dichlorobenzene		ND	ND	ND	ND	ND	5
1,4-Dichlorobenzene		ND	ND	ND	ND	ND	5
1,2-Dichlorobenzene		ND	ND	ND	ND	ND	5

ND: Below detection limits

Larry L. Schaleger, Ph.D.
Laboratory Director

ff

AMERICAN ANALYTICS

LABORATORY ANALYSIS RESULTS

Client: Law Environmental
Project No.: 58-1569
Project Name: Hawker Pacific
Sample Matrix: Soil
Method: EPA 8240

AA Project No.: A14006
Date Sampled: 6/1,2/92
Date Received: 6/2/92
Date Analyzed: 6/6/92
Units: µg/kg(ppb)
Date Reported: 6/12/92

AAID # / Compounds / ClientID #	9359 VW3-20	9360 VW4-10	9361 VW4-20	Detection Limits
Chloromethane	ND	ND	ND	5
Vinyl chloride	ND	ND	ND	5
Bromomethane	ND	ND	ND	5
Chloroethane	ND	ND	ND	5
Trichlorofluoromethane	ND	ND	ND	5
Acetone	ND	ND	ND	50
1,1-Dichloroethene	ND	ND	ND	5
Carbon disulfide	ND	ND	ND	5
Methylene chloride	ND	ND	ND	5
trans-1,2-Dichloroethene	ND	ND	ND	5
1,1-Dichloroethane	ND	ND	ND	5
2-Butanone	ND	ND	ND	50
Chloroform	ND	ND	ND	5
1,1,1-Trichloroethane	ND	ND	ND	5
Carbon tetrachloride	ND	ND	ND	5
1,2-Dichloroethane	ND	ND	ND	5
Bromodichloromethane	ND	ND	ND	5
Benzene	ND	ND	ND	5
Trichloroethene	ND	ND	ND	5
1,2-Dichloropropane	ND	ND	ND	5
trans-1,3-Dichloropropene	ND	ND	ND	5
cis-1,3-Dichloropropene	ND	ND	ND	5
1,1,2-Trichloroethane	ND	ND	ND	5
Dibromochloromethane	ND	ND	ND	5
Bromoform	ND	ND	ND	5
4-Methyl-2-pentanone	ND	ND	ND	50
Toluene	ND	ND	ND	5
2-Hexanone	ND	ND	ND	50
Tetrachloroethene	ND	ND	ND	5
Chlorobenzene	ND	ND	ND	5
Ethylbenzene	ND	ND	ND	5
m,p-Xylenes	ND	ND	ND	5
o-Xylene	ND	ND	ND	5
Styrene	ND	ND	ND	5
1,1,2,2-Tetrachloroethane	ND	ND	ND	5
1,3-Dichlorobenzene	ND	ND	ND	5
1,4-Dichlorobenzene	ND	ND	ND	5
1,2-Dichlorobenzene	ND	ND	ND	5

ND:Below detection limits

Larry L. Schaleger, Ph.D.
Laboratory Director

ff

AMERICAN ANALYTICS

LABORATORY ANALYSIS RESULTS

Client: Law Environmental
Method: EPA 8240, QC, Spike
Project No. : 58-1569

Sample Matrix: Soil
Date Analyzed: 6/6/92
Date Reported: 6/12/92

Compounds	Spike Recovery (%)	Spike/Duplicate Recovery (%)	RPD (%)
1,1- Dicloroethene	96	91	5.3
Benzene	97	97	0
Trichloroethene	102	105	2.9
Toluene	95	95	0
Chlorobenzene	96	98	2.1

RPD = Relative Percent Difference, $100[(x_1 - x_2)/\{(x_1 + x_2)/2\}]$

Larry L. Schaleger, Ph.D.
Laboratory Director

ff

LAW ENVIRONMENTAL, INC.
3320 N. San Fernando Blvd.
Burbank, California 91504
(818) 848-0214

CHAIN OF CUSTODY RECORD

Lab Log Number _____

Client Name: Law Environmental
Project Number: 55-1569
Project Name: Hawker Pacific
Report Attention: Kristen Williamson
Sampled by: KW

Sample Number	Date Sampled	Time Sampled	Type*	Sample Description	Number of Containers	Analyses Required	Remarks
9354	6/1/92	9:45	SO	VW-1 @ 10'	1	8240	
9355	6/1/92	10:05	SO	VW-1 @ 20'	1		
9356	6/2/92	10:25	SO	VW-2 @ 10'	1		
9357	6/2/92	10:45	SO	VW 2 @ 20'	1		
9358	6/2/92	12:55	SO	VW 3 @ 10'	1		
9359	6/2/92	1:20	SO	VW 3 @ 20'	1		

	Signature	Company	Date	Time
Relinquished by	Kristen Williamson	Law Environmental	6/3/92	1:45
Received by	Brad Hall			
Relinquished by				
Received by				
Relinquished by				
Received by				

NOTE: Samples are discarded 30 days after results are reported, unless other arrangements are made.
Hazardous samples will be returned to client or disposed of at client expense.

*AQ - Aqueous; NA - Nonaqueous; SL - Sludge; GW - Ground Water; SO - Soil; PE - Petroleum; OT - Other

LAW ENVIRONMENTAL, INC.
3320 N. San Fernando Blvd.
Burbank, California 91504
(818) 848-0214

CHAIN OF CUSTODY RECORD

Lab Log Number _____

Client Name: Law Environmental
Project Number: 53-1569
Project Name: Hawker Pacific
Report Attention: Kristen Williamson
Sampled by: KW

Sample Number	Date Sampled	Time Sampled	Type*	Sample Description	Number of Containers	Analyses Required: 8240	Remarks
9360	6/2/92	4:05	SO	~~MW~~ VW-4 @ 10'	1	X	
9361	6/2/92	4:25	SO	VW-4 @ 20'	1	X	

	Signature	Company	Date	Time
Relinquished by	Kristen Williamson	Law Environmental	6/3/92	8:50
Received by	Ronn Wall			
Relinquished by				
Received by				
Relinquished by				
Received by				

NOTE: Samples are discarded 30 days after results are reported, unless other arrangements are made.
Hazardous samples will be returned to client or disposed of at client expense.

*AQ - Aqueous; NA - Nonaqueous; SL - Sludge; GW - Ground Water; SO - Soil; PE - Petroleum; OI - Other

Curtis & Tompkins, Ltd., Analytical Laboratories. Since 1878
1250 S. Boyle Ave., Los Angeles, CA 90023, Phone (213) 269-7421, Fax (213) 268-5328

DATE RECEIVED: 08/29/90
DATE REPORTED: 09/05/90

LAB NUMBER: 200524

CLIENT: LAW ENVIRONMENTAL, INC.

REPORT ON: FOUR SOIL SAMPLES

PROJECT #: 58-0605

LOCATION: HAWKER PACIFIC

RESULTS: SEE ATTACHED

Reviewed By

Laboratory Director

Curtis & Tompkins, Ltd

LABORATORY NUMBER: 200524
CLIENT: LAW ENVIRONMENTAL, INC.
PROJECT #: 58-0605
LOCATION: HAWKER PACIFIC

DATE RECEIVED: 08/29/90
DATE ANALYZED: 08/31-01
DATE REPORTED: 09/05/90

METHOD: EPA 8015 (MODIFIED)
TOTAL VOLATILE HYDROCARBONS AS GASOLINE IN SOILS & WASTES
EXTRACTION: EPA 5030 PURGE & TRAP

LAB ID	SAMPLE ID	TVH AS GASOLINE (ug/Kg)
1	B-1-9	ND (500)
2	B-1-29	ND (500)
3	B-1-49	ND (500)
4	B-1-69	ND (500)

ND = NOT DETECTED; LIMIT OF DETECTION IN PARENTHESES.

QA/QC DATA SUMMARY:

Precision (Relative % Difference):	2
Accuracy (Spike % Recovery):	101

Curtis & Tompkins, Ltd

LABORATORY NUMBER: 200524-1
CLIENT: LAW ENVIRONMENTAL, INC.
PROJECT #: 58-0605
SAMPLE ID: B-1-9

DATE RECEIVED: 08/29/90
DATE ANALYZED: 08/31/90
DATE REPORTED: 09/05/90

METHOD: EPA 8240
VOLATILE ORGANICS IN SOIL

COMPOUND	RESULT	PQL
	--ug/Kg--	
Chloromethane	ND	10
Bromomethane	ND	10
Vinyl chloride	ND	10
Chloroethane	ND	10
Methylene chloride	ND	5
Acetone	ND	10
Carbon disulfide	ND	5
Trichlorofluoromethane	ND	5
1,1-Dichloroethene	ND	5
1,1-Dichloroethane	ND	5
cis-1,2-Dichloroethene	ND	5
trans-1,2-Dichloroethene	ND	5
Chloroform	ND	5
Freon 113	ND	5
1,2-Dichloroethane	ND	5
2-Butanone	ND	10
1,1,1-Trichloroethane	ND	5
Carbon tetrachloride	ND	5
Vinyl acetate	ND	10
Bromodichloromethane	ND	5
1,2-Dichloropropane	ND	5
cis-1,3-Dichloropropene	ND	5
Trichloroethylene	ND	5
Dibromochloromethane	ND	5
1,1,2-Trichloroethane	ND	5
Benzene	ND	5
trans-1,3-Dichloropropene	ND	5
2-Chloroethylvinyl ether	ND	10
Bromoform	ND	5
2-Hexanone	ND	10
4-Methyl-2-pentanone	ND	10
1,1,2,2-Tetrachloroethane	ND	5
Tetrachloroethene	ND	5
Toluene	TRACE (-4)	5
Chlorobenzene	ND	5
Ethyl benzene	ND	5
Styrene	ND	5
Total xylenes	ND	5

QA/QC SUMMARY: SURROGATE RECOVERIES PQL = PRACTICAL QUANTITATION LIMIT

1,2-Dichloroethane-d4	97 %
Toluene-d8	100 %
Bromofluorobenzene	96 %

Curtis & Tompkins, Ltd

LABORATORY NUMBER: 200524-2
CLIENT: LAW ENVIRONMENTAL, INC.
PROJECT #: 58-0605
SAMPLE ID: B-1-29

DATE RECEIVED: 08/29/90
DATE ANALYZED: 08/31/90
DATE REPORTED: 09/05/90

METHOD: EPA 8240
VOLATILE ORGANICS IN SOIL

COMPOUND	RESULT	PQL
	--ug/Kg--	
Chloromethane	ND	10
Bromomethane	ND	10
Vinyl chloride	ND	10
Chloroethane	ND	10
Methylene chloride	ND	5
Acetone	ND	10
Carbon disulfide	ND	5
Trichlorofluoromethane	ND	5
1,1-Dichloroethene	ND	5
1,1-Dichloroethane	ND	5
cis-1,2-Dichloroethene	ND	5
trans-1,2-Dichloroethene	ND	5
Chloroform	ND	5
Freon 113	ND	5
1,2-Dichloroethane	ND	5
2-Butanone	ND	10
1,1,1-Trichloroethane	ND	5
Carbon tetrachloride	ND	5
Vinyl acetate	ND	10
Bromodichloromethane	ND	5
1,2-Dichloropropane	ND	5
cis-1,3-Dichloropropene	ND	5
Trichloroethylene	ND	5
Dibromochloromethane	ND	5
1,1,2-Trichloroethane	ND	5
Benzene	ND	5
trans-1,3-Dichloropropene	ND	5
2-Chloroethylvinyl ether	ND	10
Bromoform	ND	5
2-Hexanone	ND	10
4-Methyl-2-pentanone	ND	10
1,1,2,2-Tetrachloroethane	ND	5
Tetrachloroethene	ND	5
Toluene	8	5
Chlorobenzene	ND	5
Ethyl benzene	ND	5
Styrene	ND	5
Total xylenes	ND	5

QA/QC SUMMARY: SURROGATE RECOVERIES	PQL = PRACTICAL QUANTITATION LIMIT
1,2-Dichloroethane-d4	99 %
Toluene-d8	101 %
Bromofluorobenzene	98 %

Curtis & Tompkins, Ltd

LABORATORY NUMBER: 200524-3
CLIENT: LAW ENVIRONMENTAL, INC.
PROJECT #: 58-0605
SAMPLE ID: B-1-49

DATE RECEIVED: 08/29/90
DATE ANALYZED: 08/31/90
DATE REPORTED: 09/05/90

METHOD: EPA 8240
VOLATILE ORGANICS IN SOIL

COMPOUND	RESULT	PQL
	--ug/Kg--	
Chloromethane	ND	10
Bromomethane	ND	10
Vinyl chloride	ND	10
Chloroethane	ND	10
Methylene chloride	ND	5
Acetone	ND	10
Carbon disulfide	ND	5
Trichlorofluoromethane	ND	5
1,1-Dichloroethene	ND	5
1,1-Dichloroethane	ND	5
cis-1,2-Dichloroethene	ND	5
trans-1,2-Dichloroethene	ND	5
Chloroform	ND	5
Freon 113	ND	5
1,2-Dichloroethane	ND	5
2-Butanone	ND	10
1,1,1-Trichloroethane	ND	5
Carbon tetrachloride	ND	5
Vinyl acetate	ND	10
Bromodichloromethane	ND	5
1,2-Dichloropropane	ND	5
cis-1,3-Dichloropropene	ND	5
Trichloroethylene	ND	5
Dibromochloromethane	ND	5
1,1,2-Trichloroethane	ND	5
Benzene	ND	5
trans-1,3-Dichloropropene	ND	5
2-Chloroethylvinyl ether	ND	10
Bromoform	ND	5
2-Hexanone	ND	10
4-Methyl-2-pentanone	ND	10
1,1,2,2-Tetrachloroethane	ND	5
Tetrachloroethene	ND	5
Toluene	5	5
Chlorobenzene	ND	5
Ethyl benzene	ND	5
Styrene	ND	5
Total xylenes	ND	5

QA/QC SUMMARY: SURROGATE RECOVERIES	PQL = PRACTICAL QUANTITATION LIMIT
1,2-Dichloroethane-d4	97 %
Toluene-d8	102 %
Bromofluorobenzene	95 %

Curtis & Tompkins, Ltd

LABORATORY NUMBER: 200524-4
CLIENT: LAW ENVIRONMENTAL, INC.
PROJECT #: 58-0605
SAMPLE ID: B-1-69

DATE RECEIVED: 08/29/90
DATE ANALYZED: 08/31/90
DATE REPORTED: 09/05/90

METHOD: EPA 8240
VOLATILE ORGANICS IN SOIL

COMPOUND	RESULT	PQL
	--ug/Kg--	
Chloromethane	ND	10
Bromomethane	ND	10
Vinyl chloride	ND	10
Chloroethane	ND	10
Methylene chloride	ND	5
Acetone	ND	10
Carbon disulfide	ND	5
Trichlorofluoromethane	ND	5
1,1-Dichloroethene	ND	5
1,1-Dichloroethane	ND	5
cis-1,2-Dichloroethene	ND	5
trans-1,2-Dichloroethene	ND	5
Chloroform	ND	5
Freon 113	ND	5
1,2-Dichloroethane	ND	5
2-Butanone	ND	10
1,1,1-Trichloroethane	ND	5
Carbon tetrachloride	ND	5
Vinyl acetate	ND	10
Bromodichloromethane	ND	5
1,2-Dichloropropane	ND	5
cis-1,3-Dichloropropene	ND	5
Trichloroethylene	ND	5
Dibromochloromethane	ND	5
1,1,2-Trichloroethane	ND	5
Benzene	ND	5
trans-1,3-Dichloropropene	ND	5
2-Chloroethylvinyl ether	ND	10
Bromoform	ND	5
2-Hexanone	ND	10
4-Methyl-2-pentanone	ND	10
1,1,2,2-Tetrachloroethane	ND	5
Tetrachloroethene	ND	5
Toluene	8	5
Chlorobenzene	ND	5
Ethyl benzene	ND	5
Styrene	ND	5
Total xylenes	ND	5

QA/QC SUMMARY: SURROGATE RECOVERIES PQL = PRACTICAL QUANTITATION LIMIT

1,2-Dichloroethane-d4	96 %
Toluene-d8	101 %
Bromofluorobenzene	95 %

LAW ENVIRONMENTAL, INC.
3420 N. San Fernando Blvd.
Suite 200
Burbank, California 91504
(818) 848-0214

CHAIN OF CUSTODY RECORD

Lab Log Number _____

Client Name: Law Environmental | Project Number: 58-0605

Project Name: Hawker Pacific

Report Attention: Julie Oborne | Sampled by: Julie Oborne

Sample Number	Date Sampled	Time Sampled	Type*	Sample Description	Number of Containers	Analyses Required: 8240	Analyses Required: 5015/8015	Analyses Required: ASH	Remarks
1	8-28-90	9:44	SO	B-1-9	1	X	X		TVH
2	8-28-90	10:13	SO	B-1-29	1	X	X		↓
3	8-28-90	10:47	SO	B-1-49	1	X	X		
4	8-28-90	12:20	SO	B-1-69	1	X	X		

Signature	Company	Date	Time
Relinquished by: Kristen Wolfgang	Law Environmental	8/24/90	2:00
Received by: [signature]			
Relinquished by			
Received by			
Relinquished by			
Received by			

NOTE: Samples are discarded 30 days after results are reported, unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense.

*AQ - Aqueous; NA - Nonaqueous; SL - Sludge; GW - Ground Water; SO - Soil; PE - Petroleum; OI - Other

Curtis & Tompkins, Ltd., Analytical Laboratories. Since 1878
1250 S. Boyle Ave., Los Angeles, CA 90023. Phone (213) 269-7421. Fax (213) 268-5328

DATE RECEIVED: 09/04/90
DATE REPORTED: 09/10/90

LAB NUMBER: 200541

CLIENT: LAW ENVIRONMENTAL, INC.

REPORT ON: EIGHT SOIL SAMPLES

PROJECT #: 58-0605

LOCATION: HAWKER PACIFIC

RESULTS: SEE ATTACHED

Reviewed By Victoria Nicholson

Laboratory Director

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 200541
CLIENT: LAW ENVIRONMENTAL, INC.
PROJECT #: 58-0605
LOCATION: HAWKER PACIFIC

DATE RECEIVED: 09/04/90
DATE ANALYZED: 09/06/90
DATE REPORTED: 09/10/90

METHOD: EPA 8015 (MODIFIED)
EXTRACTABLE PETROLEUM HYDROCARBONS IN SOIL
EXTRACTION: DHS LUFT PROCEDURE

LAB ID	SAMPLE ID	GASOLINE (mg/Kg)	KEROSENE (mg/Kg)	DIESEL (mg/Kg)
1	B-4-5	ND (10)	ND (10)	110*
2	B-4-20	ND (10)	ND (10)	ND (10)
3	B-5-5	ND (50)	ND (50)	7,300**
4	B-5-25	ND (10)	ND (10)	88***
5	B-6-20	ND (10)	ND (10)	ND (10)
6	B-8-5	ND (10)	ND (10)	ND (10)
7	B-8-20	ND (10)	ND (10)	ND (10)
8	B1A-74'	ND (10)	ND (10)	ND (10)

* HYDROCARBONS IN DIESEL RANGE, DOES NOT MATCH STD (C19-C30)
** HYDROCARBONS IN DIESEL RANGE, DOES NOT MATCH STD (C12-C30)
*** HYDROCARBONS IN DIESEL RANGE, DOES NOT MATCH STD (C17-C30)

ND = NOT DETECTED; PRACTICAL QUANTITATION LIMIT IN PARENTHESES.

QA/QC DATA SUMMARY:

Precision (Relative % Difference):	18
Accuracy (Spike % Recovery):	83

Curtis & Tompkins Ltd

LABORATORY NUMBER: 200541-1
CLIENT: LAW ENVIRONMENTAL, INC.
PROJECT #: 58-0605
SAMPLE ID: B-4-5

DATE RECEIVED: 09/04/90
DATE ANALYZED: 09/04-05
DATE REPORTED: 09/10/90

METHOD: EPA 8240
VOLATILE ORGANICS IN SOIL

COMPOUND		RESULT	PQL
		--ug/Kg--	
Chloromethane		ND	10
Bromomethane		ND	10
Vinyl chloride		ND	10
Chloroethane		ND	10
Methylene chloride		ND	5
Acetone		ND	10
Carbon disulfide		ND	5
Trichlorofluoromethane		ND	5
1,1-Dichloroethene		ND	5
1,1-Dichloroethane		ND	5
cis-1,2-Dichloroethene		ND	5
trans-1,2-Dichloroethene		ND	5
Chloroform		ND	5
Freon 113		ND	5
1,2-Dichloroethane		ND	5
2-Butanone		ND	10
1,1,1-Trichloroethane		ND	5
Carbon tetrachloride		ND	5
Vinyl acetate		ND	10
Bromodichloromethane		ND	5
1,2-Dichloropropane		ND	5
cis-1,3-Dichloropropene		ND	5
Trichloroethylene		ND	5
Dibromochloromethane		ND	5
1,1,2-Trichloroethane		ND	5
Benzene		ND	5
trans-1,3-Dichloropropene		ND	5
2-Chloroethylvinyl ether		ND	10
Bromoform		ND	5
2-Hexanone		ND	10
4-Methyl-2-pentanone		ND	10
1,1,2,2-Tetrachloroethane		ND	5
Tetrachloroethene	*	370	5
Toluene		40	5
Chlorobenzene		ND	5
Ethyl benzene		ND	5
Styrene		ND	5
Total xylenes		ND	5

QA/QC SUMMARY: SURROGATE RECOVERIES PQL = PRACTICAL QUANTITATION LIMIT

1,2-Dichloroethane-d4	* 1:5 DIL	101 %
Toluene-d8		103 %
Bromofluorobenzene		93 %

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 200541-2
CLIENT: LAW ENVIRONMENTAL, INC.
PROJECT #: 58-0605
SAMPLE ID: B-4-20

DATE RECEIVED: 09/04/90
DATE ANALYZED: 09/04/90
DATE REPORTED: 09/10/90

METHOD: EPA 8240
VOLATILE ORGANICS IN SOIL

COMPOUND	RESULT	PQL
	--ug/Kg--	
Chloromethane	ND	10
Bromomethane	ND	10
Vinyl chloride	ND	10
Chloroethane	ND	10
Methylene chloride	ND	5
Acetone	ND	10
Carbon disulfide	ND	5
Trichlorofluoromethane	ND	5
1,1-Dichloroethene	ND	5
1,1-Dichloroethane	ND	5
cis-1,2-Dichloroethene	ND	5
trans-1,2-Dichloroethene	ND	5
Chloroform	ND	5
Freon 113	ND	5
1,2-Dichloroethane	ND	5
2-Butanone	ND	10
1,1,1-Trichloroethane	ND	5
Carbon tetrachloride	ND	5
Vinyl acetate	ND	10
Bromodichloromethane	ND	5
1,2-Dichloropropane	ND	5
cis-1,3-Dichloropropene	ND	5
Trichloroethylene	ND	5
Dibromochloromethane	ND	5
1,1,2-Trichloroethane	ND	5
Benzene	ND	5
trans-1,3-Dichloropropene	ND	5
2-Chloroethylvinyl ether	ND	10
Bromoform	ND	5
2-Hexanone	ND	10
4-Methyl-2-pentanone	ND	10
1,1,2,2-Tetrachloroethane	ND	5
Tetrachloroethene	26	5
Toluene	14	5
Chlorobenzene	ND	5
Ethyl benzene	ND	5
Styrene	ND	5
Total xylenes	ND	5

QA/QC SUMMARY: SURROGATE RECOVERIES	PQL = PRACTICAL QUANTITATION LIMIT
1,2-Dichloroethane-d4	97 %
Toluene-d8	102 %
Bromofluorobenzene	95 %

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 200541-3
CLIENT: LAW ENVIRONMENTAL, INC.
PROJECT #: 58-0605
SAMPLE ID: B-5-5

DATE RECEIVED: 09/04/90
DATE ANALYZED: 09/04-05
DATE REPORTED: 09/10/90

METHOD: EPA 8240
VOLATILE ORGANICS IN SOIL

COMPOUND		RESULT	PQL
		--ug/Kg--	
Chloromethane		ND	10
Bromomethane		ND	10
Vinyl chloride		ND	10
Chloroethane		ND	10
Methylene chloride		ND	5
Acetone		ND	10
Carbon disulfide		ND	5
Trichlorofluoromethane		ND	5
1,1-Dichloroethene		42	5
1,1-Dichloroethane		28	5
cis-1,2-Dichloroethene		ND	5
trans-1,2-Dichloroethene		ND	5
Chloroform		ND	5
Freon 113		ND	5
1,2-Dichloroethane		ND	5
2-Butanone		ND	10
1,1,1-Trichloroethane	*	290	5
Carbon tetrachloride		ND	5
Vinyl acetate		ND	10
Bromodichloromethane		ND	5
1,2-Dichloropropane		ND	5
cis-1,3-Dichloropropene		ND	5
Trichloroethylene	*	260	5
Dibromochloromethane		ND	5
1,1,2-Trichloroethane		ND	5
Benzene		ND	5
trans-1,3-Dichloropropene		ND	5
2-Chloroethylvinyl ether		ND	10
Bromoform		ND	5
2-Hexanone		ND	10
4-Methyl-2-pentanone		ND	10
1,1,2,2-Tetrachloroethane		ND	5
Tetrachloroethene	**	130,000	5
Toluene		150	5
Chlorobenzene		ND	5
Ethyl benzene		ND	5
Styrene		ND	5
Total xylenes		ND	5

QA/QC SUMMARY: SURROGATE RECOVERIES PQL = PRACTICAL QUANTITATION LIMIT

1,2-Dichloroethane-d4	*	1:5 DIL	105 %
Toluene-d8	**	1:1000 DIL	96 %
Bromofluorobenzene			75 %

Curtis & Tompkins Ltd

LABORATORY NUMBER: 200541-4
CLIENT: LAW ENVIRONMENTAL, INC.
PROJECT #: 58-0605
SAMPLE ID: B-5-25

DATE RECEIVED: 09/04/90
DATE ANALYZED: 09/05/90
DATE REPORTED: 09/10/90

METHOD: EPA 8240
VOLATILE ORGANICS IN SOIL

COMPOUND	RESULT	PQL
	--ug/Kg--	
Chloromethane	ND	10
Bromomethane	ND	10
Vinyl chloride	ND	10
Chloroethane	ND	10
Methylene chloride	ND	5
Acetone	ND	10
Carbon disulfide	ND	5
Trichlorofluoromethane	ND	5
1,1-Dichloroethene	ND	5
1,1-Dichloroethane	ND	5
cis-1,2-Dichloroethene	ND	5
trans-1,2-Dichloroethene	ND	5
Chloroform	ND	5
Freon 113	ND	5
1,2-Dichloroethane	ND	5
2-Butanone	ND	10
1,1,1-Trichloroethane	ND	5
Carbon tetrachloride	ND	5
Vinyl acetate	ND	10
Bromodichloromethane	ND	5
1,2-Dichloropropane	ND	5
cis-1,3-Dichloropropene	ND	5
Trichloroethylene	ND	5
Dibromochloromethane	ND	5
1,1,2-Trichloroethane	ND	5
Benzene	ND	5
trans-1,3-Dichloropropene	ND	5
2-Chloroethylvinyl ether	ND	10
Bromoform	ND	5
2-Hexanone	ND	10
4-Methyl-2-pentanone	ND	10
1,1,2,2-Tetrachloroethane	ND	5
Tetrachloroethene	16	5
Toluene	TRACE (~3)	5
Chlorobenzene	ND	5
Ethyl benzene	ND	5
Styrene	ND	5
Total xylenes	ND	5

QA/QC SUMMARY: SURROGATE RECOVERIES PQL = PRACTICAL QUANTITATION LIMIT

1,2-Dichloroethane-d4	105 %
Toluene-d8	103 %
Bromofluorobenzene	97 %

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 200541-5
CLIENT: LAW ENVIRONMENTAL, INC.
PROJECT #: 58-0605
SAMPLE ID: B-6-20

DATE RECEIVED: 09/04/90
DATE ANALYZED: 09/04/90
DATE REPORTED: 09/10/90

METHOD: EPA 8240
VOLATILE ORGANICS IN SOIL

COMPOUND	RESULT	PQL
	--ug/Kg--	
Chloromethane	ND	10
Bromomethane	ND	10
Vinyl chloride	ND	10
Chloroethane	ND	10
Methylene chloride	ND	5
Acetone	ND	10
Carbon disulfide	ND	5
Trichlorofluoromethane	ND	5
1,1-Dichloroethene	ND	5
1,1-Dichloroethane	ND	5
cis-1,2-Dichloroethene	ND	5
trans-1,2-Dichloroethene	ND	5
Chloroform	ND	5
Freon 113	ND	5
1,2-Dichloroethane	ND	5
2-Butanone	ND	10
1,1,1-Trichloroethane	ND	5
Carbon tetrachloride	ND	5
Vinyl acetate	ND	10
Bromodichloromethane	ND	5
1,2-Dichloropropane	ND	5
cis-1,3-Dichloropropene	ND	5
Trichloroethylene	ND	5
Dibromochloromethane	ND	5
1,1,2-Trichloroethane	ND	5
Benzene	ND	5
trans-1,3-Dichloropropene	ND	5
2-Chloroethylvinyl ether	ND	10
Bromoform	ND	5
2-Hexanone	ND	10
4-Methyl-2-pentanone	ND	10
1,1,2,2-Tetrachloroethane	ND	5
Tetrachloroethene	ND	5
Toluene	ND	5
Chlorobenzene	ND	5
Ethyl benzene	ND	5
Styrene	ND	5
Total xylenes	ND	5

QA/QC SUMMARY: SURROGATE RECOVERIES	PQL = PRACTICAL QUANTITATION LIMIT
1,2-Dichloroethane-d4	91 %
Toluene-d8	102 %
Bromofluorobenzene	96 %

Curtis & Tompkins, Ltd

LABORATORY NUMBER: 200541-6
CLIENT: LAW ENVIRONMENTAL, INC.
PROJECT #: 58-0605
SAMPLE ID: B-8-5

DATE RECEIVED: 09/04/90
DATE ANALYZED: 09/04/90
DATE REPORTED: 09/10/90

METHOD: EPA 8240
VOLATILE ORGANICS IN SOIL

COMPOUND	RESULT	PQL
	--ug/Kg--	
Chloromethane	ND	10
Bromomethane	ND	10
Vinyl chloride	ND	10
Chloroethane	ND	10
Methylene chloride	ND	5
Acetone	ND	10
Carbon disulfide	ND	5
Trichlorofluoromethane	ND	5
1,1-Dichloroethene	ND	5
1,1-Dichloroethane	ND	5
cis-1,2-Dichloroethene	ND	5
trans-1,2-Dichloroethene	ND	5
Chloroform	ND	5
Freon 113	ND	5
1,2-Dichloroethane	ND	5
2-Butanone	ND	10
1,1,1-Trichloroethane	ND	5
Carbon tetrachloride	ND	5
Vinyl acetate	ND	10
Bromodichloromethane	ND	5
1,2-Dichloropropane	ND	5
cis-1,3-Dichloropropene	ND	5
Trichloroethylene	ND	5
Dibromochloromethane	ND	5
1,1,2-Trichloroethane	ND	5
Benzene	ND	5
trans-1,3-Dichloropropene	ND	5
2-Chloroethylvinyl ether	ND	10
Bromoform	ND	5
2-Hexanone	ND	10
4-Methyl-2-pentanone	ND	10
1,1,2,2-Tetrachloroethane	ND	5
Tetrachloroethene	ND	5
Toluene	13	5
Chlorobenzene	ND	5
Ethyl benzene	ND	5
Styrene	ND	5
Total xylenes	ND	5

QA/QC SUMMARY: SURROGATE RECOVERIES	PQL = PRACTICAL QUANTITATION LIMIT
1,2-Dichloroethane-d4	90 %
Toluene-d8	100 %
Bromofluorobenzene	91 %

Curtis & Tompkins, Ltd

LABORATORY NUMBER: 200541-7
CLIENT: LAW ENVIRONMENTAL, INC.
PROJECT #: 58-0605
SAMPLE ID: B-8-20

DATE RECEIVED: 09/04/90
DATE ANALYZED: 09/05/90
DATE REPORTED: 09/10/90

METHOD: EPA 8240
VOLATILE ORGANICS IN SOIL

COMPOUND	RESULT	PQL
	--ug/Kg--	
Chloromethane	ND	10
Bromomethane	ND	10
Vinyl chloride	ND	10
Chloroethane	ND	10
Methylene chloride	ND	5
Acetone	ND	10
Carbon disulfide	ND	5
Trichlorofluoromethane	ND	5
1,1-Dichloroethene	ND	5
1,1-Dichloroethane	ND	5
cis-1,2-Dichloroethene	ND	5
trans-1,2-Dichloroethene	ND	5
Chloroform	ND	5
Freon 113	ND	5
1,2-Dichloroethane	ND	5
2-Butanone	ND	10
1,1,1-Trichloroethane	ND	5
Carbon tetrachloride	ND	5
Vinyl acetate	ND	10
Bromodichloromethane	ND	5
1,2-Dichloropropane	ND	5
cis-1,3-Dichloropropene	ND	5
Trichloroethylene	ND	5
Dibromochloromethane	ND	5
1,1,2-Trichloroethane	ND	5
Benzene	ND	5
trans-1,3-Dichloropropene	ND	5
2-Chloroethylvinyl ether	ND	10
Bromoform	ND	5
2-Hexanone	ND	10
4-Methyl-2-pentanone	ND	10
1,1,2,2-Tetrachloroethane	ND	5
Tetrachloroethene	ND	5
Toluene	ND	5
Chlorobenzene	ND	5
Ethyl benzene	ND	5
Styrene	ND	5
Total xylenes	ND	5

QA/QC SUMMARY: SURROGATE RECOVERIES PQL = PRACTICAL QUANTITATION LIMIT

1,2-Dichloroethane-d4	92 %
Toluene-d8	101 %
Bromofluorobenzene	95 %

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 200541-8
CLIENT: LAW ENVIRONMENTAL, INC.
PROJECT #: 58-0605
SAMPLE ID: B1A-74'

DATE RECEIVED: 09/04/90
DATE ANALYZED: 09/05/90
DATE REPORTED: 09/10/90

METHOD: EPA 8240
VOLATILE ORGANICS IN SOIL

COMPOUND	RESULT	PQL
	--ug/Kg--	
Chloromethane	ND	10
Bromomethane	ND	10
Vinyl chloride	ND	10
Chloroethane	ND	10
Methylene chloride	ND	5
Acetone	ND	10
Carbon disulfide	ND	5
Trichlorofluoromethane	ND	5
1,1-Dichloroethene	ND	5
1,1-Dichloroethane	ND	5
cis-1,2-Dichloroethene	ND	5
trans-1,2-Dichloroethene	ND	5
Chloroform	ND	5
Freon 113	ND	5
1,2-Dichloroethane	ND	5
2-Butanone	ND	10
1,1,1-Trichloroethane	ND	5
Carbon tetrachloride	ND	5
Vinyl acetate	ND	10
Bromodichloromethane	ND	5
1,2-Dichloropropane	ND	5
cis-1,3-Dichloropropene	ND	5
Trichloroethylene	ND	5
Dibromochloromethane	ND	5
1,1,2-Trichloroethane	ND	5
Benzene	ND	5
trans-1,3-Dichloropropene	ND	5
2-Chloroethylvinyl ether	ND	10
Bromoform	ND	5
2-Hexanone	ND	10
4-Methyl-2-pentanone	ND	10
1,1,2,2-Tetrachloroethane	ND	5
Tetrachloroethene	ND	5
Toluene	TRACE (~4)	5
Chlorobenzene	ND	5
Ethyl benzene	ND	5
Styrene	ND	5
Total xylenes	ND	5

QA/QC SUMMARY: SURROGATE RECOVERIES	PQL = PRACTICAL QUANTITATION LIMIT
1,2-Dichloroethane-d4	90 %
Toluene-d8	102 %
Bromofluorobenzene	93 %

LAW ENVIRONMENTAL, INC.
3320 N. San Fernando Blvd.
~~Suite 300~~
Burbank, California 91504
(818) 848-0214

CHAIN OF CUSTODY RECORD

Lab Log Number _____

Client Name	Project Number
Law Environmental	58-0605
Project Name Hawker Pacific	
Report Attention Juli Oborne	**Sampled by** Juli Oborne

Sample Number	Date Sampled	Time Sampled	Type*	Sample Description	Number of Containers	Analyses Required: 8240	Analyses Required: 8015	Remarks
BIA-74	8-31-90	1301	SO	6" Brass Tube	1	X	X	USE CAUTION may have high levels of PCE + Toluene - up to 500 ppm

	Signature	Company	Date	Time
Relinquished by	D. Higgins	Law Environmental	9/4	12:45
Received by		Curtis & Tompkins	9/4/90	12:45
Relinquished by				
Received by				
Relinquished by				
Received by				

NOTE: Samples are discarded 30 days after results are reported, unless other arrangements are made.
Hazardous samples will be returned to client or disposed of at client expense.

*AQ - Aqueous; NA - Nonaqueous; SL - Sludge; GW - Ground Water; SO - Soil; PE - Petroleum; OT - Other

LAW ENVIRONMENTAL, INC.
~~1160~~ 2332 N. San Fernando Blvd.
~~Suite 200~~
Burbank, California 91504
(818) 848-0214

CHAIN OF CUSTODY RECORD

Lab Log Number _____

Client Name	Project Number
LAW Environmental	58-0605
Project Name	
Hunter Pacific	
Report Attention	**Sampled by**
Juli Oborne	Juli Oborne

Sample Number	Date Sampled	Time Sampled	Type*	Sample Description	Number of Containers	Analyses Required: 8240	Analyses Required: 4015	Remarks
✓ B-4-5	8-31-90	8:51	SO	6" Brass Tube	1	X	X	may have high lvls of PCE & Toluene up to 500 ppm
✓ B-4-20	8-31-90	9:27	SO	6" " "	1	X	X	
✓ B-5-5	8-31-90	10:02	SO	" " "	1	X	X	
✓ B-5-25	8-31-90	10:38	SO	" " "	1	X	X	
✓ B-6-20	8-31-90	11:31	SO	" " "	1	X	X	Expect low lvls of volatiles
✓ B-8-5	8-31-90	9:03	SO	" " "	1	X	X	
✓ B-8-20	8-31-90	9:32	SO	" " "	1	X	X	

	Signature	Company	Date	Time
Relinquished by	Elaine Sellers	Law Environmental	9-4-90	11:15
Received by		Curtis & Tompkins	9-4-90	11:05
Relinquished by				
Received by				
Relinquished by				
Received by				

NOTE: Samples are discarded 30 days after results are reported, unless other arrangements are made.
Hazardous samples will be returned to client or disposed of at client expense.

*AQ - Aqueous; NA - Nonaqueous; SL - Sludge; GW - Ground Water; SO - Soil; PE - Petroleum; OT - Other

Curtis & Tompkins, Ltd., Analytical Laboratories. Since 1878
1250 S. Boyle Ave., Los Angeles, CA 90023. Phone (213) 269-7421. Fax (213) 268-5328

DATE RECEIVED: 08/30/90
DATE REPORTED: 09/13/90

LAB NUMBER: 200529

CLIENT: LAW ENVIRONMENTAL, INC.

REPORT ON: SIX SOIL SAMPLES

PROJECT #: 58-0605

LOCATION: HAWKER PACIFIC

RESULTS: SEE ATTACHED

Reviewed By

Laboratory Director

Curtis & Tompkins, Ltd

LABORATORY NUMBER: 200529
CLIENT: LAW ENVIRONMENTAL, INC.
PROJECT #: 58-0605
LOCATION: HAWKER PACIFIC

DATE RECEIVED: 08/30/90
DATE ANALYZED: 09/12/90
DATE REPORTED: 09/13/90

METHOD: EPA 8015 (MODIFIED)
EXTRACTABLE PETROLEUM HYDROCARBONS IN SOIL
EXTRACTION: DHS LUFT PROCEDURE

LAB ID	SAMPLE ID	GASOLINE (mg/Kg)	KEROSENE (mg/Kg)	DIESEL (mg/Kg)
1	B-2-5	ND (10)	ND (10)	ND (10)
2	B-2-20	ND (10)	ND (10)	ND (10)
3	B-2-30	ND (10)	ND (10)	ND (10)
4	B-2-40	ND (10)	ND (10)	ND (10)
5	B-3-10	ND (10)	ND (10)	ND (10)
6	B-3-20	ND (10)	ND (10)	ND (10)

ND = NOT DETECTED; PRACTICAL QUANTITATION LIMIT IN PARENTHESES.

QA/QC DATA SUMMARY:

Precision (Relative % Difference):	5
Accuracy (Spike % Recovery):	95

Curtis & Tompkins, Ltd

LABORATORY NUMBER: 200529-1
CLIENT: LAW ENVIRONMENTAL, INC.
PROJECT #: 58-0605
SAMPLE ID: B-2-5

DATE RECEIVED: 08/30/90
DATE ANALYZED: 09/04/90
DATE REPORTED: 09/13/90

METHOD: EPA 8240
VOLATILE ORGANICS IN SOIL

COMPOUND		RESULT	PQL
		--ug/Kg--	
Chloromethane		ND	10
Bromomethane		ND	10
Vinyl chloride		ND	10
Chloroethane		ND	10
Methylene chloride		ND	5
Acetone		ND	10
Carbon disulfide		ND	5
Trichlorofluoromethane		ND	5
1,1-Dichloroethene		ND	5
1,1-Dichloroethane		ND	5
cis-1,2-Dichloroethene		ND	5
trans-1,2-Dichloroethene		ND	5
Chloroform		ND	5
Freon 113		ND	5
1,2-Dichloroethane		ND	5
2-Butanone		ND	10
1,1,1-Trichloroethane		ND	5
Carbon tetrachloride		ND	5
Vinyl acetate		ND	10
Bromodichloromethane		ND	5
1,2-Dichloropropane		ND	5
cis-1,3-Dichloropropene		ND	5
Trichloroethylene		ND	5
Dibromochloromethane		ND	5
1,1,2-Trichloroethane		ND	5
Benzene		ND	5
trans-1,3-Dichloropropene		ND	5
2-Chloroethylvinyl ether		ND	10
Bromoform		ND	5
2-Hexanone		ND	10
4-Methyl-2-pentanone		ND	10
1,1,2,2-Tetrachloroethane		ND	5
Tetrachloroethene	*	450	5
Toluene		70	5
Chlorobenzene		ND	5
Ethyl benzene		ND	5
Styrene		ND	5
Total xylenes		ND	5

QA/QC SUMMARY: SURROGATE RECOVERIES	PQL = PRACTICAL QUANTITATION LIMIT
1,2-Dichloroethane-d4	98 %
Toluene-d8	110 %
Bromofluorobenzene	87 %

* NOTE 1:10 Dilution.

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 200529-2
CLIENT: LAW ENVIRONMENTAL, INC.
PROJECT #: 58-0605
SAMPLE ID: B-2-20

DATE RECEIVED: 08/30/90
DATE ANALYZED: 09/04/90
DATE REPORTED: 09/13/90

METHOD: EPA 8240
VOLATILE ORGANICS IN SOIL

COMPOUND	RESULT	PQL
	--ug/Kg--	
Chloromethane	ND	10
Bromomethane	ND	10
Vinyl chloride	ND	10
Chloroethane	ND	10
Methylene chloride	ND	5
Acetone	ND	10
Carbon disulfide	ND	5
Trichlorofluoromethane	ND	5
1,1-Dichloroethene	ND	5
1,1-Dichloroethane	ND	5
cis-1,2-Dichloroethene	ND	5
trans-1,2-Dichloroethene	ND	5
Chloroform	ND	5
Freon 113	ND	5
1,2-Dichloroethane	ND	5
2-Butanone	ND	10
1,1,1-Trichloroethane	ND	5
Carbon tetrachloride	ND	5
Vinyl acetate	ND	10
Bromodichloromethane	ND	5
1,2-Dichloropropane	ND	5
cis-1,3-Dichloropropene	ND	5
Trichloroethylene	ND	5
Dibromochloromethane	ND	5
1,1,2-Trichloroethane	ND	5
Benzene	ND	5
trans-1,3-Dichloropropene	ND	5
2-Chloroethylvinyl ether	ND	10
Bromoform	ND	5
2-Hexanone	ND	10
4-Methyl-2-pentanone	ND	10
1,1,2,2-Tetrachloroethane	ND	5
Tetrachloroethene	42	5
Toluene	18	5
Chlorobenzene	ND	5
Ethyl benzene	ND	5
Styrene	ND	5
Total xylenes	ND	5

QA/QC SUMMARY: SURROGATE RECOVERIES	PQL = PRACTICAL QUANTITATION LIMIT
1,2-Dichloroethane-d4	107 %
Toluene-d8	103 %
Bromofluorobenzene	106 %

Curtis & Tompkins, Ltd

LABORATORY NUMBER: 200529-3
CLIENT: LAW ENVIRONMENTAL, INC.
PROJECT #: 58-0605
SAMPLE ID: B-2-30

DATE RECEIVED: 08/30/90
DATE ANALYZED: 09/04/90
DATE REPORTED: 09/13/90

METHOD: EPA 8240
VOLATILE ORGANICS IN SOIL

COMPOUND	RESULT	PQL
	--ug/Kg--	
Chloromethane	ND	10
Bromomethane	ND	10
Vinyl chloride	ND	10
Chloroethane	ND	10
Methylene chloride	ND	5
Acetone	ND	10
Carbon disulfide	ND	5
Trichlorofluoromethane	ND	5
1,1-Dichloroethene	ND	5
1,1-Dichloroethane	ND	5
cis-1,2-Dichloroethene	ND	5
trans-1,2-Dichloroethene	ND	5
Chloroform	ND	5
Freon 113	ND	5
1,2-Dichloroethane	ND	5
2-Butanone	ND	10
1,1,1-Trichloroethane	ND	5
Carbon tetrachloride	ND	5
Vinyl acetate	ND	10
Bromodichloromethane	ND	5
1,2-Dichloropropane	ND	5
cis-1,3-Dichloropropene	ND	5
Trichloroethylene	ND	5
Dibromochloromethane	ND	5
1,1,2-Trichloroethane	ND	5
Benzene	ND	5
trans-1,3-Dichloropropene	ND	5
2-Chloroethylvinyl ether	ND	10
Bromoform	ND	5
2-Hexanone	ND	10
4-Methyl-2-pentanone	ND	10
1,1,2,2-Tetrachloroethane	ND	5
Tetrachloroethene	7	5
Toluene	10	5
Chlorobenzene	ND	5
Ethyl benzene	ND	5
Styrene	ND	5
Total xylenes	ND	5

QA/QC SUMMARY: SURROGATE RECOVERIES PQL = PRACTICAL QUANTITATION LIMIT

1,2-Dichloroethane-d4	103 %
Toluene-d8	101 %
Bromofluorobenzene	109 %

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 200529-4
CLIENT: LAW ENVIRONMENTAL, INC.
PROJECT #: 58-0605
SAMPLE ID: B-2-40

DATE RECEIVED: 08/30/90
DATE ANALYZED: 09/04/90
DATE REPORTED: 09/13/90

METHOD: EPA 8240
VOLATILE ORGANICS IN SOIL

COMPOUND	RESULT	PQL
	--ug/Kg--	
Chloromethane	ND	10
Bromomethane	ND	10
Vinyl chloride	ND	10
Chloroethane	ND	10
Methylene chloride	ND	5
Acetone	ND	10
Carbon disulfide	ND	5
Trichlorofluoromethane	ND	5
1,1-Dichloroethene	ND	5
1,1-Dichloroethane	ND	5
cis-1,2-Dichloroethene	ND	5
trans-1,2-Dichloroethene	ND	5
Chloroform	ND	5
Freon 113	ND	5
1,2-Dichloroethane	ND	5
2-Butanone	ND	10
1,1,1-Trichloroethane	ND	5
Carbon tetrachloride	ND	5
Vinyl acetate	ND	10
Bromodichloromethane	ND	5
1,2-Dichloropropane	ND	5
cis-1,3-Dichloropropene	ND	5
Trichloroethylene	ND	5
Dibromochloromethane	ND	5
1,1,2-Trichloroethane	ND	5
Benzene	ND	5
trans-1,3-Dichloropropene	ND	5
2-Chloroethylvinyl ether	ND	10
Bromoform	ND	5
2-Hexanone	ND	10
4-Methyl-2-pentanone	ND	10
1,1,2,2-Tetrachloroethane	ND	5
Tetrachloroethene	ND	5
Toluene	TRACE (~4)	5
Chlorobenzene	ND	5
Ethyl benzene	ND	5
Styrene	ND	5
Total xylenes	ND	5

QA/QC SUMMARY: SURROGATE RECOVERIES PQL = PRACTICAL QUANTITATION LIMIT

1,2-Dichloroethane-d4	105 %
Toluene-d8	102 %
Bromofluorobenzene	113 %

Curtis & Tompkins, Ltd

LABORATORY NUMBER: 200529-5
CLIENT: LAW ENVIRONMENTAL, INC.
PROJECT #: 58-0605
SAMPLE ID: B-3-10

DATE RECEIVED: 08/30/90
DATE ANALYZED: 09/06/90
DATE REPORTED: 09/13/90

METHOD: EPA 8240
VOLATILE ORGANICS IN SOIL

COMPOUND	RESULT	PQL
	--ug/Kg--	
Chloromethane	ND	10
Bromomethane	ND	10
Vinyl chloride	ND	10
Chloroethane	ND	10
Methylene chloride	ND	5
Acetone	ND	10
Carbon disulfide	ND	5
Trichlorofluoromethane	ND	5
1,1-Dichloroethene	ND	5
1,1-Dichloroethane	ND	5
cis-1,2-Dichloroethene	ND	5
trans-1,2-Dichloroethene	ND	5
Chloroform	ND	5
Freon 113	ND	5
1,2-Dichloroethane	ND	5
2-Butanone	ND	10
1,1,1-Trichloroethane	ND	5
Carbon tetrachloride	ND	5
Vinyl acetate	ND	10
Bromodichloromethane	ND	5
1,2-Dichloropropane	ND	5
cis-1,3-Dichloropropene	ND	5
Trichloroethylene	ND	5
Dibromochloromethane	ND	5
1,1,2-Trichloroethane	ND	5
Benzene	ND	5
trans-1,3-Dichloropropene	ND	5
2-Chloroethylvinyl ether	ND	10
Bromoform	ND	5
2-Hexanone	ND	10
4-Methyl-2-pentanone	ND	10
1,1,2,2-Tetrachloroethane	ND	5
Tetrachloroethene	21	5
Toluene	18	5
Chlorobenzene	ND	5
Ethyl benzene	ND	5
Styrene	ND	5
Total xylenes	ND	5

QA/QC SUMMARY: SURROGATE RECOVERIES PQL = PRACTICAL QUANTITATION LIMIT

1,2-Dichloroethane-d4	105 %
Toluene-d8	104 %
Bromofluorobenzene	96 %

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 200529-6
CLIENT: LAW ENVIRONMENTAL, INC.
PROJECT #: 58-0605
SAMPLE ID: B-3-20

DATE RECEIVED: 08/30/90
DATE ANALYZED: 09/06/90
DATE REPORTED: 09/13/90

METHOD: EPA 8240
VOLATILE ORGANICS IN SOIL

COMPOUND	RESULT	PQL
	--ug/Kg--	
Chloromethane	ND	10
Bromomethane	ND	10
Vinyl chloride	ND	10
Chloroethane	ND	10
Methylene chloride	ND	5
Acetone	ND	10
Carbon disulfide	ND	5
Trichlorofluoromethane	ND	5
1,1-Dichloroethene	ND	5
1,1-Dichloroethane	ND	5
cis-1,2-Dichloroethene	ND	5
trans-1,2-Dichloroethene	ND	5
Chloroform	ND	5
Freon 113	ND	5
1,2-Dichloroethane	ND	5
2-Butanone	ND	10
1,1,1-Trichloroethane	ND	5
Carbon tetrachloride	ND	5
Vinyl acetate	ND	10
Bromodichloromethane	ND	5
1,2-Dichloropropane	ND	5
cis-1,3-Dichloropropene	ND	5
Trichloroethylene	ND	5
Dibromochloromethane	ND	5
1,1,2-Trichloroethane	ND	5
Benzene	ND	5
trans-1,3-Dichloropropene	ND	5
2-Chloroethylvinyl ether	ND	10
Bromoform	ND	5
2-Hexanone	ND	10
4-Methyl-2-pentanone	ND	10
1,1,2,2-Tetrachloroethane	ND	5
Tetrachloroethene	20	5
Toluene	25	5
Chlorobenzene	ND	5
Ethyl benzene	ND	5
Styrene	ND	5
Total xylenes	ND	5

QA/QC SUMMARY: SURROGATE RECOVERIES	PQL = PRACTICAL QUANTITATION LIMIT
1,2-Dichloroethane-d4	102 %
Toluene-d8	104 %
Bromofluorobenzene	95 %

LAW ENVIRONMENTAL, INC.
3420 N. San Fernando Blvd.
Suite 200
Burbank, California 91504
(818) 848-0214

CHAIN OF CUSTODY RECORD

Lab Log Number _____

Client Name: Law Environmental
Project Number: 58-0605
Project Name: Hawker Pacific
Report Attention: Juli Oborne
Sampled by: Juli Oborne

Sample Number	Date Sampled	Time Sampled	Type*	Sample Description	Number of Containers	Analyses Required: 8240	Analyses Required: 8015 (TEH)	Remarks
B-2-5	8-29-90	12:55	SO	6" Brass Tube	1	X	X	Expect high levels of PCE + Toluene in samples from B-3.
B-2-10		12:38				X	X	
B-2-30		1:25					X	
B-2-40		2:35				X	X	
B-3-10		3:50				X	X	
B-3-20		4:30				X	X	

	Signature	Company	Date	Time
Relinquished by	Juli Oborne	Law Environmental	8-30-90	1:59
Received by	Paul Meed	Curtis & Tompkins	8-30-90	13:59
Relinquished by				
Received by				
Relinquished by				
Received by				

NOTE: Samples are discarded 30 days after results are reported, unless other arrangements are made.
Hazardous samples will be returned to client or disposed of at client expense.

*AQ - Aqueous; NA - Nonaqueous; SL - Sludge; GW - Ground Water; SO - Soil; PE - Petroleum; OT - Other

Client: LAW ENVIRONMENTAL, INC.
Job No: 14339
Date Analyzed: 14-Dec-89
Analysis: EPA 601/602 (8010/8020)

Sample: CB-1D @ 10'
Matrix: Soil
Samp Amt: 1 gm
Dil Fact: 1

Compound	Concentration ug/Kg	Detection Limits
Chloromethane	ND	5
Bromomethane	ND	5
Vinyl Chloride	ND	3
Chloroethane	ND	5
Methylene Chloride	ND	25
1,1-Dichloroethylene	ND	3
1,1-Dichloroethane	ND	2
trans-1,2-Dichloroethylene	ND	1.5
Trichlorofluoromethane	ND	2
Chloroform	ND	1.5
1,2-Dichloroethane	ND	2
1,1,1-Trichloroethane	ND	1.5
Carbon Tetrachloride	ND	1.5
Bromodichloromethane	ND	1.5
1,1,2,2-Tetrachloroethane	ND	1.5
1,2-Dichloropropane	ND	1.5
trans-1,3-Dichloropropylene	ND	1.5
Trichloroethylene	ND	1.5
Dibromochloromethane	ND	1.5
1,1,2-Trichloroethane	ND	1.5
Benzene	ND	1
cis-1,3-Dichloropropylene	ND	1.5
2-Chloroethyl Vinyl Ether	ND	4
Bromoform	ND	2.5
Tetrachloroethylene	ND	1.5
Toluene	ND	1
Chlorobenzene	ND	3
Ethylbenzene	ND	1
Total Xylenes	ND	1
1,3-Dichlorobenzene	ND	1
1,4-Dichlorobenzene	ND	1
1,2-Dichlorobenzene	ND	1

ND-Not Detected. The limit of detection is reported above.

Client: LAW ENVIRONMENTAL, INC.
Job No: 14339
Date Analyzed: 14-Dec-89
Analysis: EPA 601/602 (8010/8020)

Sample: CB-1D @ 15'
Matrix: Soil
Samp Amt: 1 gm
Dil Fact: 1

Compound	Concentration ug/Kg	Detection Limits
Chloromethane	ND	5
Bromomethane	ND	5
Vinyl Chloride	ND	3
Chloroethane	ND	5
Methylene Chloride	ND	25
1,1-Dichloroethylene	ND	3
1,1-Dichloroethane	ND	2
trans-1,2-Dichloroethylene	ND	1.5
Trichlorofluoromethane	ND	2
Chloroform	ND	1.5
1,2-Dichloroethane	ND	2
1,1,1-Trichloroethane	ND	1.5
Carbon Tetrachloride	ND	1.5
Bromodichloromethane	ND	1.5
1,1,2,2-Tetrachloroethane	ND	1.5
1,2-Dichloropropane	ND	1.5
trans-1,3-Dichloropropylene	ND	1.5
Trichloroethylene	ND	1.5
Dibromochloromethane	ND	1.5
1,1,2-Trichloroethane	ND	1.5
Benzene	ND	1
cis-1,3-Dichloropropylene	ND	1.5
2-Chloroethyl Vinyl Ether	ND	4
Bromoform	ND	2.5
Tetrachloroethylene	ND	1.5
Toluene	ND	1
Chlorobenzene	ND	3
Ethylbenzene	ND	1
Total Xylenes	ND	1
1,3-Dichlorobenzene	ND	1
1,4-Dichlorobenzene	ND	1
1,2-Dichlorobenzene	ND	1

ND-Not Detected. The limit of detection is reported above.

Client: LAW ENVIRONMENTAL, INC.
Job No: 14339
Date Analyzed: 14-Dec-89
Analysis: EPA 601/602 (8010/8020)

Sample: CB-1D @ 20'
Matrix: Soil
Samp Amt: 1 gm
Dil Fact: 1

Compound	Concentration ug/Kg	Detection Limits
Chloromethane	ND	5
Bromomethane	ND	5
Vinyl Chloride	ND	3
Chloroethane	ND	5
Methylene Chloride	ND	25
1,1-Dichloroethylene	ND	3
1,1-Dichloroethane	ND	2
trans-1,2-Dichloroethylene	ND	1.5
Trichlorofluoromethane	ND	2
Chloroform	ND	1.5
1,2-Dichloroethane	ND	2
1,1,1-Trichloroethane	ND	1.5
Carbon Tetrachloride	ND	1.5
Bromodichloromethane	ND	1.5
1,1,2,2-Tetrachloroethane	ND	1.5
1,2-Dichloropropane	ND	1.5
trans-1,3-Dichloropropylene	ND	1.5
Trichloroethylene	ND	1.5
Dibromochloromethane	ND	1.5
1,1,2-Trichloroethane	ND	1.5
Benzene	ND	1
cis-1,3-Dichloropropylene	ND	1.5
2-Chloroethyl Vinyl Ether	ND	4
Bromoform	ND	2.5
Tetrachloroethylene	ND	1.5
Toluene	ND	1
Chlorobenzene	ND	3
Ethylbenzene	ND	1
Total Xylenes	ND	1
1,3-Dichlorobenzene	ND	1
1,4-Dichlorobenzene	ND	1
1,2-Dichlorobenzene	ND	1

ND-Not Detected. The limit of detection is reported above.

Client: LAW ENVIRONMENTAL, INC.
Job No: 14339
Date Analyzed: 14-Dec-89
Analysis: EPA 601/602 (8010/8020)

Sample: CB-1D @ 25'
Matrix: Soil
Samp Amt: 1 gm
Dil Fact: 1

Compound	Concentration ug/Kg	Detection Limits
Chloromethane	ND	5
Bromomethane	ND	5
Vinyl Chloride	ND	3
Chloroethane	ND	5
Methylene Chloride	ND	25
1,1-Dichloroethylene	ND	3
1,1-Dichloroethane	ND	2
trans-1,2-Dichloroethylene	ND	1.5
Trichlorofluoromethane	ND	2
Chloroform	ND	1.5
1,2-Dichloroethane	ND	2
1,1,1-Trichloroethane	ND	1.5
Carbon Tetrachloride	ND	1.5
Bromodichloromethane	ND	1.5
1,1,2,2-Tetrachloroethane	ND	1.5
1,2-Dichloropropane	ND	1.5
trans-1,3-Dichloropropylene	ND	1.5
Trichloroethylene	ND	1.5
Dibromochloromethane	ND	1.5
1,1,2-Trichloroethane	ND	1.5
Benzene	ND	1
cis-1,3-Dichloropropylene	ND	1.5
2-Chloroethyl Vinyl Ether	ND	4
Bromoform	ND	2.5
Tetrachloroethylene	ND	1.5
Toluene	ND	1
Chlorobenzene	ND	3
Ethylbenzene	ND	1
Total Xylenes	ND	1
1,3-Dichlorobenzene	ND	1
1,4-Dichlorobenzene	ND	1
1,2-Dichlorobenzene	ND	1

ND-Not Detected. The limit of detection is reported above.

Client: LAW ENVIRONMENTAL, INC.
Job No: 14339
Date Analyzed: 14-Dec-89
Analysis: EPA 601/602 (8010/8020)

Sample: CB-1D @ 30'
Matrix: Soil
Samp Amt: 1 gm
Dil Fact: 1

Compound	Concentration ug/Kg	Detection Limits
Chloromethane	ND	5
Bromomethane	ND	5
Vinyl Chloride	ND	3
Chloroethane	ND	5
Methylene Chloride	ND	25
1,1-Dichloroethylene	ND	3
1,1-Dichloroethane	ND	2
trans-1,2-Dichloroethylene	ND	1.5
Trichlorofluoromethane	ND	2
Chloroform	ND	1.5
1,2-Dichloroethane	ND	2
1,1,1-Trichloroethane	ND	1.5
Carbon Tetrachloride	ND	1.5
Bromodichloromethane	ND	1.5
1,1,2,2-Tetrachloroethane	ND	1.5
1,2-Dichloropropane	ND	1.5
trans-1,3-Dichloropropylene	ND	1.5
Trichloroethylene	ND	1.5
Dibromochloromethane	ND	1.5
1,1,2-Trichloroethane	ND	1.5
Benzene	ND	1
cis-1,3-Dichloropropylene	ND	1.5
2-Chloroethyl Vinyl Ether	ND	4
Bromoform	ND	2.5
Tetrachloroethylene	ND	1.5
Toluene	ND	1
Chlorobenzene	ND	1
Ethylbenzene	ND	1
Total Xylenes	ND	1
1,3-Dichlorobenzene	ND	1
1,4-Dichlorobenzene	ND	1
1,2-Dichlorobenzene	ND	1

ND-Not Detected. The limit of detection is reported above.

Client: LAW ENVIRONMENTAL, INC.
Job No: 14339
Date Analyzed: 14-Dec-89
Analysis: EPA 601/602 (8010/8020)

Sample: CB-1D @ 35'
Matrix: Soil
Samp Amt: 1 gm
Dil Fact: 1

Compound	Concentration ug/Kg	Detection Limits
Chloromethane	ND	5
Bromomethane	ND	5
Vinyl Chloride	ND	3
Chloroethane	ND	5
Methylene Chloride	ND	25
1,1-Dichloroethylene	ND	3
1,1-Dichloroethane	ND	2
trans-1,2-Dichloroethylene	ND	1.5
Trichlorofluoromethane	ND	2
Chloroform	ND	1.5
1,2-Dichloroethane	ND	2
1,1,1-Trichloroethane	ND	1.5
Carbon Tetrachloride	ND	1.5
Bromodichloromethane	ND	1.5
1,1,2,2-Tetrachloroethane	ND	1.5
1,2-Dichloropropane	ND	1.5
trans-1,3-Dichloropropylene	ND	1.5
Trichloroethylene	ND	1.5
Dibromochloromethane	ND	1.5
1,1,2-Trichloroethane	ND	1.5
Benzene	ND	1
cis-1,3-Dichloropropylene	ND	1.5
2-Chloroethyl Vinyl Ether	ND	4
Bromoform	ND	2.5
Tetrachloroethylene	ND	1.5
Toluene	4.2	1
Chlorobenzene	ND	1
Ethylbenzene	ND	1
Total Xylenes	ND	1
1,3-Dichlorobenzene	ND	1
1,4-Dichlorobenzene	ND	1
1,2-Dichlorobenzene	ND	1

ND-Not Detected. The limit of detection is reported above.

Client: LAW ENVIRONMENTAL, INC.
Job No: 14339
Date Analyzed: 14-Dec-89
Analysis: EPA 601/602 (8010/8020)

Sample: CB-1D @ 40'
Matrix: Soil
Samp Amt: 1 gm
Dil Fact: 1

Compound	Concentration ug/Kg	Detection Limits
Chloromethane	ND	5
Bromomethane	ND	5
Vinyl Chloride	ND	3
Chloroethane	ND	5
Methylene Chloride	ND	25
1,1-Dichloroethylene	ND	3
1,1-Dichloroethane	ND	2
trans-1,2-Dichloroethylene	ND	1.5
Trichlorofluoromethane	ND	2
Chloroform	ND	1.5
1,2-Dichloroethane	ND	2
1,1,1-Trichloroethane	ND	1.5
Carbon Tetrachloride	ND	1.5
Bromodichloromethane	ND	1.5
1,1,2,2-Tetrachloroethane	ND	1.5
1,2-Dichloropropane	ND	1.5
trans-1,3-Dichloropropylene	ND	1.5
Trichloroethylene	ND	1.5
Dibromochloromethane	ND	1.5
1,1,2-Trichloroethane	ND	1.5
Benzene	ND	1
cis-1,3-Dichloropropylene	ND	1.5
2-Chloroethyl Vinyl Ether	ND	4
Bromoform	ND	2.5
Tetrachloroethylene	ND	1.5
Toluene	ND	1
Chlorobenzene	ND	1
Ethylbenzene	ND	1
Total Xylenes	ND	1
1,3-Dichlorobenzene	ND	1
1,4-Dichlorobenzene	ND	1
1,2-Dichlorobenzene	ND	1

ND-Not Detected. The limit of detection is reported above.

Client: LAW ENVIRONMENTAL
Job No: 14339
Date Analyzed: 14-Dec-89
Analysis: EPA 601/602 (8010/8020)

Sample: LAB BLANK
Matrix: Soil
Samp Amt: 1 gm
Dil Fact: 1

Compound	Concentration ug/Kg	Detection Limits
Chloromethane	ND	5
Bromomethane	ND	5
Vinyl Chloride	ND	3
Chloroethane	ND	5
Methylene Chloride	ND	25
1,1-Dichloroethylene	ND	3
1,1-Dichloroethane	ND	2
trans-1,2-Dichloroethylene	ND	1.5
Trichlorofluoromethane	ND	2
Chloroform	ND	1.5
1,2-Dichloroethane	ND	2
1,1,1-Trichloroethane	ND	1.5
Carbon Tetrachloride	ND	1.5
Bromodichloromethane	ND	1.5
1,1,2,2-Tetrachloroethane	ND	1.5
1,2-Dichloropropane	ND	1.5
trans-1,3-Dichloropropylene	ND	1.5
Trichloroethylene	ND	1.5
Dibromochloromethane	ND	1.5
1,1,2-Trichloroethane	ND	1.5
Benzene	ND	1
cis-1,3-Dichloropropylene	ND	1.5
2-Chloroethyl Vinyl Ether	ND	4
Bromoform	ND	2.5
Tetrachloroethylene	ND	1.5
Toluene	1	1
Chlorobenzene	ND	1
Ethylbenzene	ND	1
Total Xylenes	ND	1
1,3-Dichlorobenzene	ND	1
1,4-Dichlorobenzene	ND	1
1,2-Dichlorobenzene	ND	1

ND-Not Detected. The limit of detection is reported above.

Client:	LAW ENVIRONMENTAL	Sample:	LAB BLANK
Job No:	14339		
Date Analyzed:	14-Dec-89	Matrix:	Soil
		Samp Amt:	1 gm
Analysis:	EPA 601/602 (8010/8020)	Dil Fact:	1

Compound	Concentration ug/Kg	Detection Limits
Chloromethane	ND	5
Bromomethane	ND	5
Vinyl Chloride	ND	3
Chloroethane	ND	5
Methylene Chloride	ND	25
1,1-Dichloroethylene	ND	3
1,1-Dichloroethane	ND	2
trans-1,2-Dichloroethylene	ND	1.5
Trichlorofluoromethane	ND	2
Chloroform	ND	1.5
1,2-Dichloroethane	ND	2
1,1,1-Trichloroethane	ND	1.5
Carbon Tetrachloride	ND	1.5
Bromodichloromethane	ND	1.5
1,1,2,2-Tetrachloroethane	ND	1.5
1,2-Dichloropropane	ND	1.5
trans-1,3-Dichloropropylene	ND	1.5
Trichloroethylene	ND	1.5
Dibromochloromethane	ND	1.5
1,1,2-Trichloroethane	ND	1.5
Benzene	ND	1
cis-1,3-Dichloropropylene	ND	1.5
2-Chloroethyl Vinyl Ether	ND	4
Bromoform	ND	2.5
Tetrachloroethylene	ND	1.5
Toluene	2	1
Chlorobenzene	3	1
Ethylbenzene	ND	1
Total Xylenes	ND	1
1,3-Dichlorobenzene	ND	1
1,4-Dichlorobenzene	ND	1
1,2-Dichlorobenzene	ND	1

ND-Not Detected. The limit of detection is reported above.

Client: LAW ENVIRONMENTAL
Job No: 14339
Date Analyzed: 13-Dec-89
Analysis: EPA 601/602 (8010/8020)

Sample: LAB BLANK
Matrix: Soil
Samp Amt: 1 gm
Dil Fact: 1

Compound	Concentration ug/Kg	Detection Limits
Chloromethane	ND	5
Bromomethane	ND	5
Vinyl Chloride	ND	3
Chloroethane	ND	5
Methylene Chloride	ND	25
1,1-Dichloroethylene	ND	3
1,1-Dichloroethane	ND	2
trans-1,2-Dichloroethylene	ND	1.5
Trichlorofluoromethane	ND	2
Chloroform	ND	1.5
1,2-Dichloroethane	ND	2
1,1,1-Trichloroethane	ND	1.5
Carbon Tetrachloride	ND	1.5
Bromodichloromethane	ND	1.5
1,1,2,2-Tetrachloroethane	ND	1.5
1,2-Dichloropropane	ND	1.5
trans-1,3-Dichloropropylene	ND	1.5
Trichloroethylene	ND	1.5
Dibromochloromethane	ND	1.5
1,1,2-Trichloroethane	ND	1.5
Benzene	ND	1
cis-1,3-Dichloropropylene	ND	1.5
2-Chloroethyl Vinyl Ether	ND	4
Bromoform	ND	2.5
Tetrachloroethylene	ND	1.5
Toluene	2	1
Chlorobenzene	2	1
Ethylbenzene	ND	1
Total Xylenes	ND	1
1,3-Dichlorobenzene	ND	1
1,4-Dichlorobenzene	ND	1
1,2-Dichlorobenzene	ND	1

ND-Not Detected. The limit of detection is reported above.

1 of 2

LAW ENVIRONMENTAL, INC.
3420 N. San Fernando Blvd.
Suite 200
Burbank, California 91504
(818) 848-0214

CHAIN OF CUSTODY RECORD

Lab Log Number _____

Client Name: Hawker Pacific | Project Number: 58-9661

Project Name:

Report Attention: Warren Gross | Sampled by: Warren Gross

Sample Number	Date Sampled	Time Sampled	Type*	Sample Description	Number of Containers	8010	8020	HOLD	Remarks
1	12/7/89	0830	SO	B-1D @ 45' ✓	1			X	A Please use methods
2		0840		50' ✓	1	X	X		to obtain low detection
3		0850		55' ✓	1			X	limits required by
4		0900		60' ✓	1	X	X		RWQCB AB1803
5		0905		65' ✓	1			X	program and include
6		0910		70' ✓	1	X	X		with report the
7		0920		75' ✓	1			X	QA/QC package
8		0940		80' ✓	1	X	X		required by the
9		1200		B-2D @ ~~WATER~~ 45' ✓	1			X	RWQCB
10		1210		~~WATER~~ 50' ✓	1	X	X		Please report
11		1220		~~WATER~~ 55' ✓	1			X	sample description
12	↓	1230	↓	~~WATER~~ 60' ✓	1	X	X		on final report

	Signature	Company	Date	Time
Relinquished by	Warren N Gross	Law Environmental, Inc.	12/8/89	~~0830~~ 0900 ND
Received by	Bob DeBay	Redd'i x Prest	12/8/89	10:00 AM
Relinquished by				
Received by	Mary Cederwall	WCAS	12-8	11:50
Relinquished by				AM
Received by				

NOTE: Samples are discarded 30 days after results are reported, unless other arrangements are made.
Hazardous samples will be returned to client or disposed of at client expense.

*AQ - Aqueous; NA - Nonaqueous; SL - Sludge; GW - Ground Water; SO - Soil; PE - Petroleum; OT - Other

D14339

LAW ENVIRONMENTAL, INC.
3420 N. San Fernando Blvd.
Suite 200
Burbank, California 91504
(818) 848-0214

CHAIN OF CUSTODY RECORD

Lab Log Number _____

Client Name: Hawker Pacific | Project Number: 58-9661

Project Name:

Report Attention: Warren Gross | Sampled by: Warren Gross

Sample Number	Date Sampled	Time Sampled	Type*	Sample Description	Number of Containers	Analyses Required: 8010	8020	HOLD	Remarks
13	11/7/89	1235	SO	B-2D @ 65' ✓	1			X	
14		1240		70' ✓	1	X	X		
15		1250		75' ✓	1			X	
16		1310		80' ✓	1	X	X		
17		1040		CB-1D @ 10' ✓	1	X	X		
18		1050		15' ✓	1	X	X		
19		1105		20' ✓	1	X	X		
20		1120		25' ✓	1	X	X		
21		1145		30' ✓	1	X	X		
22		1205		35' ✓	1	X	X		
23		1220		40' ✓	1	X	X		

	Signature	Company	Date	Time
Relinquished by	Warren W. Gross	Law Environmental, Inc.	12/8/89	1000
Received by	Bob DeBay	Kent; x Fed Ex	12/8/89	10:00 A.M.
Relinquished by				
Received by	Mary Cederwall	WCA	12/8	11:50 A.M.
Relinquished by				
Received by				

NOTE: Samples are discarded 30 days after results are reported, unless other arrangements are made.
Hazardous samples will be returned to client or disposed of at client expense.

14339

*AQ - Aqueous; NA - Nonaqueous; SL - Sludge; GW - Ground Water; SO - Soil; PE - Petroleum; OT - Other

December 18, 1989

WEST COAST ANALYTICAL SERVICE, INC.
ANALYTICAL CHEMISTS

LAW ENVIRONMENTAL, INC.
3420 N. San Fernando Blvd, Suite 200
Burbank, CA 91504

Attn: Warren Gross

JOB NO. 14339

A

LABORATORY REPORT

Samples Received: Twenty-three (23) soils
Date Received: 12-8-89
Purchase Order No: Proj#: 58-9661/Hawker Pacific

The samples were analyzed as follows:

Samples Analyzed	Analysis	Results
Fifteen (15) soils	Halogenated and Aromatic Volatile Organics by EPA 8010/8020	Data Sheets
One (1) soil	Matrix Spike/Matrix Spike Duplicate by EPA 8010/8020	Data Sheet

Michael Shelton
Senior Chemist

B. Michael Hovanec
Senior Staff Chemist

9840 Alburtis Avenue • Santa Fe Springs, California 90670 • 213/948-2225 • FAX 213/948-5850

Client: LAW ENVIRONMENTAL, INC.
Job No: 14339
Date Analyzed: 13-Dec-89
Analysis: EPA 601/602 (8010/8020)

Sample: B-1D @ 50'
Matrix: Soil
Samp Amt: 1 gm
Dil Fact: 1

Compound	Concentration ug/Kg	Detection Limits
Chloromethane	ND	5
Bromomethane	ND	5
Vinyl Chloride	ND	3
Chloroethane	ND	5
Methylene Chloride	ND	25
1,1-Dichloroethylene	ND	3
1,1-Dichloroethane	ND	2
trans-1,2-Dichloroethylene	ND	1.5
Trichlorofluoromethane	ND	2
Chloroform	ND	1.5
1,2-Dichloroethane	ND	2
1,1,1-Trichloroethane	ND	1.5
Carbon Tetrachloride	ND	1.5
Bromodichloromethane	ND	1.5
1,1,2,2-Tetrachloroethane	ND	1.5
1,2-Dichloropropane	ND	1.5
trans-1,3-Dichloropropylene	ND	1.5
Trichloroethylene	ND	1.5
Dibromochloromethane	ND	1.5
1,1,2-Trichloroethane	ND	1.5
Benzene	ND	1
cis-1,3-Dichloropropylene	ND	1.5
2-Chloroethyl Vinyl Ether	ND	4
Bromoform	ND	2.5
Tetrachloroethylene	ND	1.5
Toluene	ND	1
Chlorobenzene	ND	2
Ethylbenzene	ND	1
Total Xylenes	ND	1
1,3-Dichlorobenzene	ND	1
1,4-Dichlorobenzene	ND	1
1,2-Dichlorobenzene	ND	1

ND-Not Detected. The limit of detection is reported above.

Client: LAW ENVIRONMENTAL, INC.
Job No: 14339
Date Analyzed: 13-Dec-89
Analysis: EPA 601/602 (8010/8020)

Sample: B-1D @ 60'
Matrix: Soil
Samp Amt: 1 gm
Dil Fact: 1

Compound	Concentration ug/Kg	Detection Limits
Chloromethane	ND	5
Bromomethane	ND	5
Vinyl Chloride	ND	3
Chloroethane	ND	5
Methylene Chloride	ND	25
1,1-Dichloroethylene	ND	3
1,1-Dichloroethane	ND	2
trans-1,2-Dichloroethylene	ND	1.5
Trichlorofluoromethane	ND	2
Chloroform	ND	1.5
1,2-Dichloroethane	ND	2
1,1,1-Trichloroethane	ND	1.5
Carbon Tetrachloride	ND	1.5
Bromodichloromethane	ND	1.5
1,1,2,2-Tetrachloroethane	ND	1.5
1,2-Dichloropropane	ND	1.5
trans-1,3-Dichloropropylene	ND	1.5
Trichloroethylene	ND	1.5
Dibromochloromethane	ND	1.5
1,1,2-Trichloroethane	ND	1.5
Benzene	ND	1
cis-1,3-Dichloropropylene	ND	1.5
2-Chloroethyl Vinyl Ether	ND	4
Bromoform	ND	2.5
Tetrachloroethylene	ND	1.5
Toluene	ND	1
Chlorobenzene	ND	2
Ethylbenzene	ND	1
Total Xylenes	ND	1
1,3-Dichlorobenzene	ND	1
1,4-Dichlorobenzene	ND	1
1,2-Dichlorobenzene	ND	1

ND-Not Detected. The limit of detection is reported above.

Client: LAW ENVIRONMENTAL, INC.
Job No: 14339
Date Analyzed: 13-Dec-89
Analysis: EPA 601/602 (8010/8020)

Sample: B-1D @ 70'
Matrix: Soil
Samp Amt: 1 gm
Dil Fact: 1

Compound	Concentration ug/Kg	Detection Limits
Chloromethane	ND	5
Bromomethane	ND	5
Vinyl Chloride	ND	3
Chloroethane	ND	5
Methylene Chloride	ND	25
1,1-Dichloroethylene	ND	3
1,1-Dichloroethane	ND	2
trans-1,2-Dichloroethylene	ND	1.5
Trichlorofluoromethane	ND	2
Chloroform	ND	1.5
1,2-Dichloroethane	ND	2
1,1,1-Trichloroethane	ND	1.5
Carbon Tetrachloride	ND	1.5
Bromodichloromethane	ND	1.5
1,1,2,2-Tetrachloroethane	ND	1.5
1,2-Dichloropropane	ND	1.5
trans-1,3-Dichloropropylene	ND	1.5
Trichloroethylene	ND	1.5
Dibromochloromethane	ND	1.5
1,1,2-Trichloroethane	ND	1.5
Benzene	ND	1
cis-1,3-Dichloropropylene	ND	1.5
2-Chloroethyl Vinyl Ether	ND	4
Bromoform	ND	2.5
Tetrachloroethylene	ND	1.5
Toluene	ND	1
Chlorobenzene	ND	2
Ethylbenzene	ND	1
Total Xylenes	ND	1
1,3-Dichlorobenzene	ND	1
1,4-Dichlorobenzene	ND	1
1,2-Dichlorobenzene	ND	1

ND-Not Detected. The limit of detection is reported above.

Client: LAW ENVIRONMENTAL, INC.
Job No: 14339
Date Analyzed: 13-Dec-89
Analysis: EPA 601/602 (8010/8020)

Sample: B-1D @ 80'
Matrix: Soil
Samp Amt: 1 gm
Dil Fact: 1

Compound	Concentration ug/Kg	Detection Limits
Chloromethane	ND	5
Bromomethane	ND	5
Vinyl Chloride	ND	3
Chloroethane	ND	5
Methylene Chloride	ND	25
1,1-Dichloroethylene	ND	3
1,1-Dichloroethane	ND	2
trans-1,2-Dichloroethylene	ND	1.5
Trichlorofluoromethane	ND	2
Chloroform	ND	1.5
1,2-Dichloroethane	ND	2
1,1,1-Trichloroethane	ND	1.5
Carbon Tetrachloride	ND	1.5
Bromodichloromethane	ND	1.5
1,1,2,2-Tetrachloroethane	ND	1.5
1,2-Dichloropropane	ND	1.5
trans-1,3-Dichloropropylene	ND	1.5
Trichloroethylene	ND	1.5
Dibromochloromethane	ND	1.5
1,1,2-Trichloroethane	ND	1.5
Benzene	ND	1
cis-1,3-Dichloropropylene	ND	1.5
2-Chloroethyl Vinyl Ether	ND	4
Bromoform	ND	2.5
Tetrachloroethylene	ND	1.5
Toluene	ND	1
Chlorobenzene	ND	2
Ethylbenzene	ND	1
Total Xylenes	ND	1
1,3-Dichlorobenzene	ND	1
1,4-Dichlorobenzene	ND	1
1,2-Dichlorobenzene	ND	1

ND-Not Detected. The limit of detection is reported above.

Client: LAW ENVIRONMENTAL, INC.
Job No: 14339
Date Analyzed: 13-Dec-89
Analysis: EPA 601/602 (8010/8020)

Sample: B-2D @ 50'
Matrix: Soil
Samp Amt: 1 gm
Dil Fact: 1

Compound	Concentration ug/Kg	Detection Limits
Chloromethane	ND	5
Bromomethane	ND	5
Vinyl Chloride	ND	3
Chloroethane	ND	5
Methylene Chloride	ND	25
1,1-Dichloroethylene	ND	3
1,1-Dichloroethane	ND	2
trans-1,2-Dichloroethylene	ND	1.5
Trichlorofluoromethane	ND	2
Chloroform	ND	1.5
1,2-Dichloroethane	ND	2
1,1,1-Trichloroethane	ND	1.5
Carbon Tetrachloride	ND	1.5
Bromodichloromethane	ND	1.5
1,1,2,2-Tetrachloroethane	ND	1.5
1,2-Dichloropropane	ND	1.5
trans-1,3-Dichloropropylene	ND	1.5
Trichloroethylene	ND	1.5
Dibromochloromethane	ND	1.5
1,1,2-Trichloroethane	ND	1.5
Benzene	ND	1
cis-1,3-Dichloropropylene	ND	1.5
2-Chloroethyl Vinyl Ether	ND	4
Bromoform	ND	2.5
Tetrachloroethylene	ND	1.5
Toluene	ND	1
Chlorobenzene	ND	3
Ethylbenzene	ND	1
Total Xylenes	ND	1
1,3-Dichlorobenzene	ND	1
1,4-Dichlorobenzene	ND	1
1,2-Dichlorobenzene	ND	1

ND-Not Detected. The limit of detection is reported above.

Client: LAW ENVIRONMENTAL, INC.
Job No: 14339
Date Analyzed: 14-Dec-89
Analysis: EPA 601/602 (8010/8020)

Sample: B-2D @ 60'
Matrix: Soil
Samp Amt: 1 gm
Dil Fact: 1

Compound	Concentration ug/Kg	Detection Limits
Chloromethane	ND	5
Bromomethane	ND	5
Vinyl Chloride	ND	3
Chloroethane	ND	5
Methylene Chloride	ND	25
1,1-Dichloroethylene	ND	3
1,1-Dichloroethane	ND	2
trans-1,2-Dichloroethylene	ND	1.5
Trichlorofluoromethane	ND	2
Chloroform	ND	1.5
1,2-Dichloroethane	ND	2
1,1,1-Trichloroethane	ND	1.5
Carbon Tetrachloride	ND	1.5
Bromodichloromethane	ND	1.5
1,1,2,2-Tetrachloroethane	ND	1.5
1,2-Dichloropropane	ND	1.5
trans-1,3-Dichloropropylene	ND	1.5
Trichloroethylene	ND	1.5
Dibromochloromethane	ND	1.5
1,1,2-Trichloroethane	ND	1.5
Benzene	ND	1
cis-1,3-Dichloropropylene	ND	1.5
2-Chloroethyl Vinyl Ether	ND	4
Bromoform	ND	2.5
Tetrachloroethylene	ND	1.5
Toluene	ND	1
Chlorobenzene	ND	3
Ethylbenzene	ND	1
Total Xylenes	ND	1
1,3-Dichlorobenzene	ND	1
1,4-Dichlorobenzene	ND	1
1,2-Dichlorobenzene	ND	1

ND-Not Detected. The limit of detection is reported above.

Client: LAW ENVIRONMENTAL, INC.
Job No: 14339
Date Analyzed: 14-Dec-89
Analysis: EPA 601/602 (8010/8020)

Sample: B-2D @ 70'
Matrix: Soil
Samp Amt: 1 gm
Dil Fact: 1

Compound	Concentration ug/Kg	Detection Limits
Chloromethane	ND	5
Bromomethane	ND	5
Vinyl Chloride	ND	3
Chloroethane	ND	5
Methylene Chloride	ND	25
1,1-Dichloroethylene	ND	3
1,1-Dichloroethane	ND	2
trans-1,2-Dichloroethylene	ND	1.5
Trichlorofluoromethane	ND	2
Chloroform	ND	1.5
1,2-Dichloroethane	ND	2
1,1,1-Trichloroethane	ND	1.5
Carbon Tetrachloride	ND	1.5
Bromodichloromethane	ND	1.5
1,1,2,2-Tetrachloroethane	ND	1.5
1,2-Dichloropropane	ND	1.5
trans-1,3-Dichloropropylene	ND	1.5
Trichloroethylene	ND	1.5
Dibromochloromethane	ND	1.5
1,1,2-Trichloroethane	ND	1.5
Benzene	ND	1
cis-1,3-Dichloropropylene	ND	1.5
2-Chloroethyl Vinyl Ether	ND	4
Bromoform	ND	2.5
Tetrachloroethylene	ND	1.5
Toluene	ND	1
Chlorobenzene	ND	3
Ethylbenzene	ND	1
Total Xylenes	ND	1
1,3-Dichlorobenzene	ND	1
1,4-Dichlorobenzene	ND	1
1,2-Dichlorobenzene	ND	1

ND-Not Detected. The limit of detection is reported above.

L-4

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P.O. BOX 15870
RIYADH 11454, SAUDI ARABIA

April 22, 1993

WRITER'S DIRECT DIAL NUMBER

(213) 229-7814

OUR FILE NUMBER

C 37336-00001

Mr. Christopher Stubbs
U.S. Environmental Protection Agency
Region IX
South Coast Groundwater Section (H-6-4)
75 Hawthorne Street
San Francisco, CA 94105

Mr. Thomas P. Mintz
U.S. Environmental Protection Agency
Region IX
Office of the Regional Counsel (RC-3-3)
75 Hawthorne Street
San Francisco, CA 94105

Steven C. Silverman
U.S. Department of Justice
Environmental Enforcement Section
Land and Natural Resources Division
10th & Pennsylvania Avenue, N.W.
Room 1740
Washington, D.C. 20530

Re: San Fernando Valley Superfund Site, North Hollywood Operable Unit; Hawker Pacific Facility, 11310 Sherman Way, Sun Valley, California

Gentlemen:

This is to respond to the U.S. EPA's letter to Hawker Pacific Inc., dated March 16, 1993, to your inquiries

regarding prior owners and operators at the facility and to your request that Hawker Pacific enter a tolling agreement with respect to the statute of limitations regarding EPA's past costs. We will address each of those topics in that order.

First, with respect to your letter demanding that Hawker Pacific assume financial responsibility for the groundwater cleanup costs in the North Hollywood operable unit, this letter will confirm the position that Hawker Pacific presented in its meeting with you on April 8. As we discussed at that meeting, after a technical investigation at the site, Hawker Pacific concludes there is no basis for it to be held liable for any groundwater contamination in the region.

The scope and results of the company's investigation are contained in the report of Law/Crandall, Inc., dated April 6, 1993, which we presented to you at the meeting. The investigation discloses some shallow soil contamination with chlorinated solvent, notably perchloroethylene ("PCE"), at the Hawker Pacific facility between Buildings 1 and 2. Numerous soil samples taken from this small area have demonstrated that this contamination is of limited extent and that it does not come close to the groundwater, which historical data from local water wells demonstrate has been 200 or more feet below ground surface for the past 30 years. To put it in some better perspective, we enclose a recent photo of the area in question to make clear just how small it is. (Original photo enclosed to Mr. Silverman.)

The conclusion that the contamination is limited in extent is consistent with the history of operations and physical structures at the site: Hawker Pacific believes that the area in question has never been used in an operational way for the handling of solvents, nor is Hawker Pacific aware of any spill of solvents in this area. Steve Silverman of the Justice Department asked in our April 8 meeting whether this is supported by employee recollections. We enclose a declaration of Harry Gunn, who worked at the facility from 1969 until his retirement in 1991. (Original to Mr. Silverman.) As you can see, Mr. Gunn's testimony establishes that the area in question was located between machine shop operations in Buildings 1 and 2. The machine shop did not use any substantial quantities of chlorinated solvents in its operations. The area in question between the buildings was

used to store machine oils. The area where chlorinated solvents were used was the plating shop located at the back of Building 2, and the solvents for that operations were stored behind that building in areas investigated and found to be clean in the Law/Crandall investigation.

Based on the investigation by and conclusions of its technical consultant, Law/Crandall, and on its own review of operations and the history of the paving and structures in the affected area, therefore, Hawker Pacific does not intend to contribute to groundwater cleanup expenses. Moreover, it is our view that there is no factual basis for any good faith claim that Hawker Pacific is liable. We note that Hawker Pacific has been fully cooperative with the agency investigation in this area of the San Fernando Valley, under the supervision of the California Regional Water Quality Control Board for the Los Angeles region, and has spent a substantial amount of money and time to pursue the investigation.

The company will be having some additional soil samples taken and analyzed in conjunction with remediation of the soil at the site. This remediation workplan has already been approved by the Regional Water Board. While we do not believe that these samples are necessary to resolve the issue addressed by this letter -- specifically, whether contamination originating at the site has reached groundwater -- the investigation should provide additional, redundant confirmation that it has not done so. The company expects to have results, which it will promptly make available to EPA, within the next 90 days. If you disagree with our consultant's analysis of the data gathered to date, we would (without conceding that any such disagreement is reasonable) like to hear your technical analysis promptly so that it can be taken into account and addressed in this next phase of work.

With respect to the Government's request for additional information regarding prior operators at the site, Hawker Pacific reiterates what it has stated in its prior responses to EPA requests for information: To the extent there is the chlorinated solvent PCE in any amount in the soil at the site, it must have come from prior operators. Since Hawker Pacific began operations at the site in April of 1987, it has not used PCE. Hawker Pacific has operated a vapor degreaser in connection with its plating operation, as did

prior operators at the site. Hawker Pacific has used only 1-1-1 Trichloroethane ("1-1-1 TCA") in the degreaser since it began operations in April 1987. Hawker Pacific believes that PCE was commonly used by industry up to the mid-1980s, but that such use was generally discontinued in that time period. Hawker Pacific believes that former owners or operators at the site did use PCE in the vapor degreaser. Accordingly, although Hawker Pacific believes that there is no basis to charge any owner or operator of the site with liability for groundwater contamination from the minor PCE soil spill detected at the site, we reiterate that any responsibility for the PCE that is at the site would be with the prior operators listed below.

According to information we obtained from the California Secretary of State, these prior operators should be contacted at the following addresses (note: the information regarding AK Holding Inc. is based upon both California Secretary of State files and information obtained directly from Inchcape PLC):

AK Holding Inc.
(successor to Inchcape PLC)
executive address:
150 North Michigan Ave.
Suite 2500
Chicago, IL 60601

agent for service:
c/o CT Corporation System
818 W. Seventh Street
Los Angeles, CA 90017

Parker Hannifin Corporation
executive address:
1209 Orange Street
Wilmington, DE 19801

agent for service:
c/o CT Corporation System
818 W. Seventh Street
Los Angeles, CA 90017

Bertea Corporation
executive address:
17325 Euclid Ave.
Cleveland, OH 44112

agent for service:
c/o CT Corporation Systems
818 W. Seventh Street
Los Angeles, CA 90017

Zero Corporation
executive address:
444 So. Flower Street
Suite 2100
Los Angeles, CA 90071

agent for service:
R.H. Borchert
444 So. Flower Street
Suite 2100
Los Angeles, CA 90071

Canoga Industries
executive address:
444 So. Flower Street
Suite 2100
Los Angeles, CA 90071

agent for service:
G.A. Daniels
444 So. Flower Street
Suite 2100
Los Angeles, CA 90071

One additional prior operator, Steller Hydraulics was reportedly dissolved in 1969. We believe this company was owned by the current landlords.

As a final matter, I have executed for Hawker Pacific the tolling agreement (signature page enclosed) forwarded by Steve Silverman.

In conclusion, we recognize that the agency has a large volume of data to sift through with respect to the PRPs in the San Fernando Valley generally and in North Hollywood more specifically, and it was for that reason that we had Law/Crandall prepare a summary of the investigation to date at the Hawker Pacific site. We believe it is in the interest of both EPA and Hawker Pacific that the agency have time to review this information carefully, and we would like to hear your response. We are hopeful that the tolling agreement will allow the Government to analyze the facts fully and agree with Hawker Pacific's position.

If you have any questions about the matters set forth in this letter, please let me know. Please give me a call after you have had opportunity to digest and consider the presentation that we made on April 6. Please note that the company plans to conduct the technical work described above in the immediate future, and would like to have any technical comments you may have as soon as possible.

Very truly yours,

Michael A. Monahan

MAM/par

LL931030.077 /11+

DECLARATION OF HARRY GUNN

I, HARRY GUNN, declare:

1. I am a retired machinist supervisor for Hawker Pacific, Inc. ("Hawker Pacific"). I make this declaration in connection with Hawker Pacific's submissions to the United States Environmental Protection Agency concerning the facility it currently operates at 11310 Sherman Way, Sun Valley, California (the "11310 Sherman Way facility"). I have personal knowledge of the matters contained in this declaration, and could testify competently to them if called as a witness in any proceeding.

2. I began working at the 11310 Sherman Way facility in 1969. I was employed full-time at that facility continuously until my retirement in 1991.

3. Throughout my twenty-two years of employment at the 11310 Sherman Way facility, I worked in either Building 1, Building 2, or Building 3, as shown on the attached site map. Between 1969 and 1983 I was employed as a machinist; between 1983 and my retirement in 1991, I was supervisor of all machine operations in Building 1. Based upon that employment history, I am thoroughly familiar with the various operations at the facility, and the changes which have been made at the facility over

time, particularly in Buildings 1 and 2, and the area between those buildings.

4. Between 1969 and 1991, operations at the facility that involved ongoing use of a degreasing solvent bath took place in the Plating Shop in the rear (south end) of Building 2. Those operations involved the use of organic solvents to clean various aircraft components prior to plating.

5. Between 1969 and 1991, no substantial quantities of solvent were used in ongoing operations in Machine Shop operations, which were located in Building 1, the front (north portion) of Building 2 and Building 3. (I retired inn 1991, the machine shop operation in Building 2 was moved to Building 1 and that area of Building 2 was used for engineering and records storage.) Small quantities of solvent were occasionally used in maintenance to clean the outsides of the machine shop equipment in those areas. That solvent was obtained from the Plating Shop in 1 or 2 gallon buckets.

6. Between 1969 and approximately 1982, solvents used for degreasing at the facility were stored in steel drums located on the asphalt parking lot in an area approximately one-half way between Buildings 4 and 5. In approximately 1982, solvent storage was moved into a large tank immediately behind the south end of Building 2.

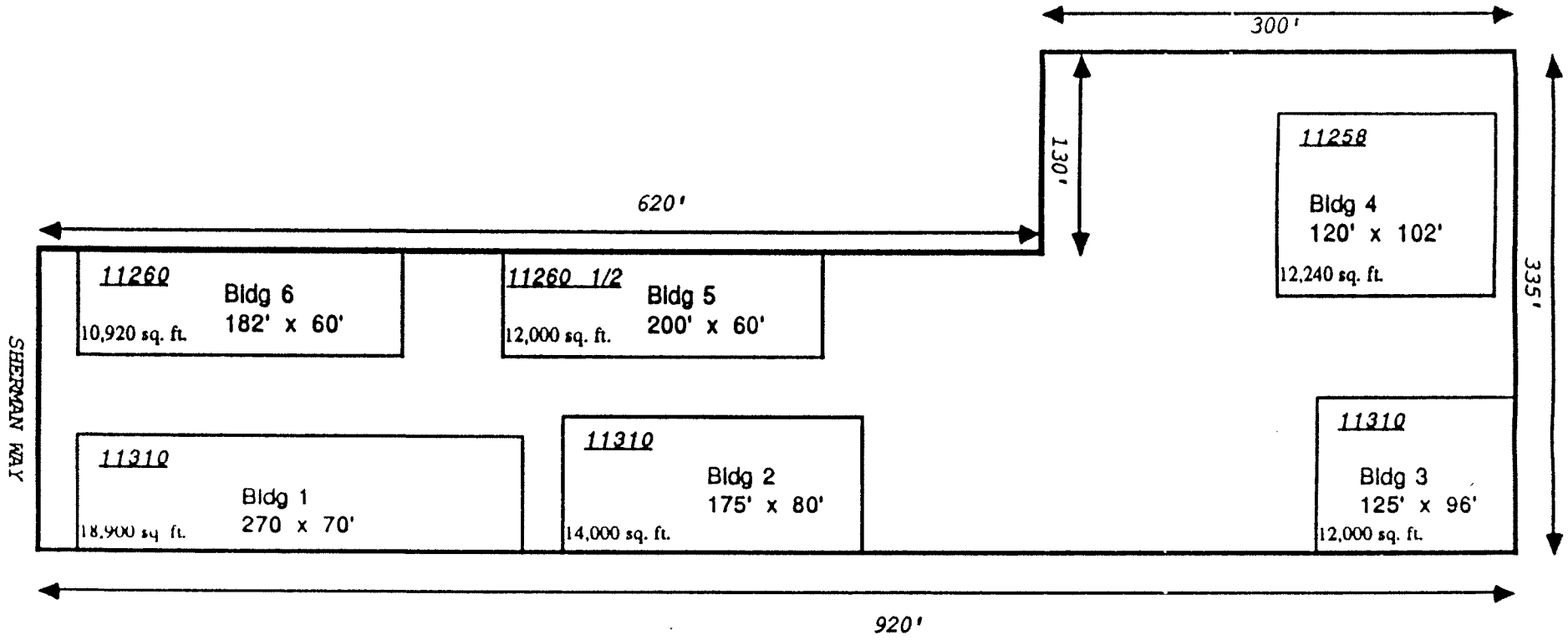
7. At no time between 1969 and 1991 were solvents stored in the area between Buildings 1 and 2. Between 1969 and 1991, the area between Buildings 1 and 2 was used to store machine oils, coolants and lubricants for use in the Building 1 and 2 Machine Shops.

8. Between 1969 and 1991, the ground area between Buildings 1 and 2 was entirely covered by cement. In approximately 1982 a low cinder block birm wall was constructed in the area between Buildings 1 and 2. This was the area where the machine oils, coolants and lubricants mentioned above in paragraph 7 were stored. Except for that birm wall, between 1969 and 1991 no construction activities took place in that area. Specifically, at no point during that period was an underground tank installed between Buildings 1 and 2.

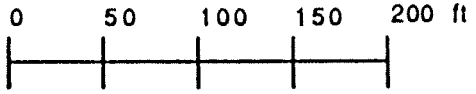
I declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct. Executed this 16th day of April, 1993.

Harry Gunn

LL931050069



HAWKER PACIFIC
SUN VALLEY, CA



L-5

Site Investigations: Evaluation of PCE Impacts to Shallow Soils at 11310 Sherman Way, Sun Valley, CA

Volume I: Report, Tables, Figures and Exhibits

March 25, 1996

Prepared for:

Hawker Pacific, Inc.
and
Gordon and Peggy Wagner
and
Joseph Basinger

Prepared by:

Geraghty & Miller, Inc.
3700 State Street, Suite 350
Santa Barbara, CA 93105

GERAGHTY
& MILLER, INC.
Environmental Services

A Heidemij company

March 26, 1996

Mr. Jaydeb Das, P.E.
California Environmental Protection Agency
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754

Dear Mr. Das:

Enclosed are volumes I and II of the report entitled, "Site Investigations: Evaluation of PCE Impacts to Shallow Soils at 11310 Sherman Way, Sun Valley, CA", dated March 25, 1996. Hawker Pacific, Inc. currently conducts business operations at this site. Volume I includes the Report, Tables, Figures, and Exhibits. Volume II contains appendices.

If you have any remaining questions regarding this report, please contact Mr. David Lokken at Hawker Pacific, Inc. at telephone (818) 765-6201, or myself at the telephone number listed on the letterhead.

Very Truly Yours,

Stephen J. Cullen, Ph.D.
Principal Scientist

3700 State Street, Suite 350 • Santa Barbara, California 93105 • (805) 687-7559 • FAX (805) 687-0838

The material and data in this report were prepared by trained individuals in a manner consistent with generally accepted practices of environmental professionals. The methods, materials, discussion, conclusions, and recommendations contained in this report have been reviewed and approved by the licensed professional listed below.

Geraghty & Miller, Inc.

Stephen J. Cullen
Principal Scientist

Lorne G. Everett, Ph.D.
Chief Research Hydrologist

E.W. Peter Jalajas
Registered Geologist, No. 4743

CONTENTS

CONTENTS (continued)

EXECUTIVE SUMMARY

By its October 3, 1995 and prior correspondence, the California Regional Water Quality Control Board ("CRWQCB") has requested that Hawker Pacific operate a soil vapor extraction system ("VES") at the only location at 11310 Sherman Way, Sun Valley, California ("the Site") where prior investigations show concentrated tetrachloroethylene ("PCE") in soils. VES was proposed by Hawker Pacific's then environmental consultant Law Environmental, Inc. (now known as Law/Crandall, Inc.) ("Law Environmental") to remediate the PCE in soil. However, further investigation of the Site and surrounding areas, as well as research into the nature and characteristics of PCE vapor have led Geraghty & Miller to conclude that no further action should be taken to remediate PCE impacted soils or to investigate PCE soil gas at the Site. First, PCE was not detected in the most recent soil sampling conducted at the Site (Figure 1). Thus, the motivation for operating the VES is gone. Second, our evaluation using the CRWQCB Interim Guidance for Remediation of VOC-Impacted Sites shows that no further action is necessary at the Site. Third, existing PCE data from the Site shows a lack of correlation between the area of previous high PCE soil concentration and the area of higher PCE vapor concentration, indicating that the PCE vapors in the Site subsurface are not the result of PCE in Site soils, but rather the result of lateral migration of vapors from off-site.

This Report documents and summarizes relevant investigations and studies conducted at the Site as they relate to the existence and extent of PCE impact in soil, soil vapor, and groundwater at the Site. The basis for Geraghty & Miller's recommendation that no further action be taken at the Site is also explained.

1.0 INTRODUCTION

Geraghty & Miller is pleased to submit this Report of Site Investigations: Evaluation of PCE Impacts to Shallow Soils (the "Report") to the CRWQCB in response to your October 3, 1995 letter to Hawker Pacific, Inc. The October 3 letter requested that Hawker Pacific undertake certain actions including implementation of a VES at 11310 Sherman Way, Sun Valley, California, the Site owned by the Wagner Living Trust and Joseph Basinger and currently operated by Hawker Pacific. The Report includes: 1) a description of the Site; 2) a review of the historic and recent environmental investigations at the Site, including documents containing all analytical data; 3) an evaluation, based on the CRWQCB (Los Angeles) guidance entitled "Interim Guidance for Remediation of VOC Impacted Sites," of site soil cleanup levels appropriate to be protective of underlying groundwater, and 4) our recommendation and supporting data that no further action be taken at the Site because recent investigations show that the former area of soil impacted by PCE is no longer of concern, and because soil gas impacted with PCE is ubiquitous in the vadose zone near the Site, operating a VES will only draw that contamination to the Site and Site soils.

2.0 PHYSICAL CHARACTERISTICS OF THE SITE

2.1 SITE SETTING

The Site is located in southern Sun Valley at 11310 Sherman Way. The Site is situated five miles south of Hansen Dam, five miles northeast of the Sepulveda Dam, four miles north of the Los Angeles River, two and one half miles east of the Tujunga Wash, and four miles north of the Santa Monica Mountains (ALT, 1990) (Figure 2). The Site is located in the North Hollywood Operable Unit (NHOU) of the San Fernando Valley Superfund site (Figure 3).

The Site is divided into two parcels which are owned by different entities. The western portion with which we are concerned, is currently, and has been, owned by the Wagner Living Trust and Joseph Basinger since approximately 1966. The eastern portion of the property is currently owned by Industrial Bowling Corporation. As described below, both parcels were investigated under the direction of the CRWQCB beginning in 1988. The only area currently under review is the alley between Buildings Nos. 1 and 2 on the Wagner and Basinger property (Figure 4). By letter dated February 21, 1990, the CRWQCB informed Hawker Pacific that no further action was required with respect to the CRWQCB's well investigation program for the remainder of the Site, including the portion owned by Industrial Bowling (Exhibit A).

2.2 HYDROGEOLOGIC SETTING

The elevation of this Site is approximately 740 feet above sea level. The water table is approximately 237 feet below the surface of the Site. Monitoring wells located a few hundred feet north of the Site in the Los Angeles Unified School District Bus Maintenance Facility (LAUSD) show that the groundwater monitoring well water level in

the immediate vicinity of the Site was 237.5 feet below ground surface with a southward gradient of 0.001 ft./ft. on October 27th, 1995 (Lindmark, 1995).

Structurally, the San Fernando Valley is an elongated basin bordered by the Santa Susannah and San Gabriel Mountains in the north, Verdugo Mountains in the east and Santa Monica Mountains in the south. The Verdugo Fault, an active fault, is approximately 2.5 miles northeast of the Site. This concealed fault runs underground in a northwestern direction to the Los Angeles Reservoir.

The Los Angeles river and its tributaries drain San Fernando Valley through the Los Angeles Narrows. A major tributary of the Los Angeles River, Tujunga Creek, flows in a southwesterly direction and drains the canyons and valleys in the San Gabriel Mountains. The Verdugo Fault is known to be an effective barrier to eastward groundwater flow.

The geologic deposits within the San Fernando Valley are composed primarily of interbedded coarse-grained sands and gravels. These deposits occur as a series of coalescing alluvial fans formed by stream tributaries draining the surrounding mountains. Holocene and Pleistocene alluvial fill sediments in the southeastern portion of the valley near the LAUSD site are reported to consist of sand and gravel, with clay interbeds. A total of more than 500 feet of alluvial deposits are reported to underlie the site.

The Rinaldi-Toluca, North Hollywood, Whitnall and Erwin groundwater production well fields stretch from the northwest to south of the Site (Figure 5). There are three spreading grounds (Hansen, Tujunga, and Branford) for artificial recharge. All are located 3 to 4 miles northwest of the Site.

The area is highly urbanized, and is largely asphalt and concrete drained with a highly developed storm drainage system, and concrete-lined drainage channels (ALT

1990) which manage and control surface runoff. This urban environment reduces direct recharge from percolating precipitation waters.

3.0 HISTORY OF REGULATORY ACTION AND ENVIRONMENTAL INVESTIGATIONS AT THE SITE

Investigation of the Site began in 1988. Under the direction of the CRWQCB, soil samples were taken and analyzed from areas of the Site chosen by the CRWQCB. In February 1990, the CRWQCB instructed Hawker Pacific that no further action was required at the Site. However, by letter dated June 20, 1989, Hawker Pacific notified the CRWQCB that Hawker Pacific had recently discovered a brass stand pipe protruding through the pavement in the area between Buildings 1 and 2. Subsequent investigations revealed an abandoned underground storage tank and sump and a highly localized area of soil contaminated with PCE mixed with diesel oil. Numerous work plans to remediate the soil in the tank/sump area through vapor extraction were submitted to the CRWQCB for comment and approval, culminating in the October 3, 1995 letter requesting, among other things, implementation of the VES. The history of this correspondence and the investigations performed at the Site are described below, followed by G&M's conclusions regarding these historic investigations.

3.1 HISTORY OF OWNERSHIP AND OPERATIONS

Gordon Wagner and Joseph Basinger purchased the roughly western portion of the Site in approximately 1963. The remaining portions of the Site, the roughly eastern and southern portions, were purchased by Industrial Bowling Corporation in 1972. Gordon Wagner and Joseph Basinger and Industrial Bowling Corporation still retain ownership of their respective portions of the Site, however, the Wagner share of the Site is currently owned by the Wagner Living Trust.

Operations at the Site began in approximately 1963 in the western portion of the Site with the company owned and operated by Gordon Wagner and Joseph Basinger, Stellar Hydraulics, Inc. Stellar Hydraulics manufactured, overhauled, and repaired airplane landing equipment. Over time, operations at the Site expanded into the eastern and

southern portions of the Site, and while certain operations have changed since 1963, the purpose of the Site, to manufacture, overhaul, and repair airplane landing equipment, has remained the same.

Stellar Hydraulics sold its business to Canoga Industries in approximately 1969. Canoga Industries operated at the Site until approximately April 1977 when Canoga merged with Zero Corporation. In approximately July 1979, Zero Corporation sold its assets at the Site to Bertea Corporation. In approximately December 1980, Bertea Corporation merged with Parker-Hannifin. Parker-Hannifin operated at the Site until approximately September 1982 when Flight Accessory Services purchased and took operation control of the assets at the Site. In Spring of 1987, Hawker Pacific purchased substantially all of the assets at the Site. Hawker Pacific has been operating there ever since. Fire, SCAQMD and business permits which have been obtained for the aforementioned entities are detailed in Table 1.

3.2 REGULATORY HISTORY EXCEPT FOR TANK/SUMP AREA

By letter dated May 6, 1988, the CRWQCB requested that Hawker Pacific complete a Mandatory Chemical Use Questionnaire because, according to the CRWQCB, the Site was geographically within an area showing groundwater impact with volatile organic compounds ("VOCs"). Hawker Pacific responded to the Questionnaire in October 1988.

On August 31, 1988, the CRWQCB inspected the Site. By letter dated September 6, 1988, the CRWQCB requested a work plan for conducting a subsurface investigation at certain areas of the Site chosen by the CRWQCB. The purpose of the work plan was to determine whether the soil at the Site was impacted by VOCs. From October 25, 1988 through November 17, 1989, work plans for three phases of work were submitted to and approved by the CRWQCB. The soil sampling results specified in the third work plan

were submitted to the CRWQCB by letter dated January 11,1990. The on-Site areas investigated (Figure 6) were near the chemical storage sheds, the aboveground trichloroethane tank, the aboveground waste oil tank and flammable liquid shed, two private sewage disposal systems, and the industrial waste clarifier. After reviewing the soil sampling results from all of these areas, the CRWQCB notified Hawker Pacific by letter dated February 21, 1990 (Exhibit A), that no further action was necessary at the Site. The details of these investigations are described below.

3.3 FINDINGS OF AREAS OTHER THAN TANK/SUMP AREA

3.3.1 Outside Storage Areas

Three borings were drilled adjacent to outside storage areas during an AB1803 assessment conducted in December 1988 by Law Environmental. The borings were completed to a depth of 10 feet. One boring was located at the south of Building 2 next to the chemical storage sheds and the TCA above ground storage tank. The other two borings were located south of Building 5 near the aboveground waste oil tank and the flammable liquid shed. Soil samples were collected at depths of 1, 5, and 10 feet and analyzed by Brown and Caldwell Laboratories for VOCs by EPA Method 8240.

No VOCs were detected at or above the laboratory detection limits that were not determined to be a laboratory contaminant.

3.3.2 Private Sewage Disposal Systems

In May 1989, Law Environmental Inc. drilled two 40-foot borings near each of the two private sewage disposal systems. Soil samples were collected at 5-foot intervals and analyzed by West Coast Analytical Service, Inc., for VOCs by EPA Methods 8010/8020.

No VOCs were detected in the samples at or above the laboratory detection limits except toluene. Toluene was detected in the soil samples from both borings with a maximum concentration of 120 µg/kg in the 10-foot sample from boring B-2. This concentration is below the California action level of 300 µg/kg for soil (California State Water Resources Control Board, 1991).

In December 1989, Law Environmental Inc. drilled two 80-foot borings adjacent to the two private sewage disposal systems. Soil samples were collected at 5-foot intervals beginning at a depth of 45 feet. The 50-, 60-, 70-, and 80-foot samples were submitted to West Coast Analytical Service, Inc., for analyses of VOCs (EPA Methods 8010/8020). Laboratory analyses of the soil sample collected from the 80-foot borings drilled adjacent to the two private sewage disposal systems did not indicate the presence of VOCs at or above the laboratory detection limits.

3.3.3 Industrial Waste Clarifier

In May 1989, Law Environmental, Inc. drilled two borings adjacent to an industrial waste clarifier in Building 2 to a depth of 6.5 feet. Samples were collected at depths of 2.5 and 6.5 feet and analyzed by West Coast Analytical Service, Inc. for VOCs by EPA Method 8010/8020. Low concentrations of toluene and PCE were detected in the samples. The maximum toluene concentration detected was 28 µg/kg in the 6.5-foot sample from Boring CB-1, while the maximum PCE concentration was 7 µg/kg in the 6.5-foot sample from Boring CB-2.

In December 1989, Law Environmental drilled one additional boring terminated at a depth of 40 feet, at the location of the industrial waste clarifier in Building 2. Soil samples were collected from this boring at 5-foot intervals beginning at a depth of 10 feet and analyzed by West Coast Analytical Service for VOCs by EPA Methods 8010/8020.

Toluene was detected at 4.2 µg/kg in the 35-foot sample collected from this boring. However, toluene was detected in the laboratory blank samples. No other VOCs were detected in any of the soil samples collected from this boring.

3.4 REGULATORY HISTORY OF UNDERGROUND TANK/SUMP AREA

By letter dated June 20, 1989, Hawker Pacific notified the CRWQCB that Hawker Pacific had discovered a brass standpipe protruding from the pavement in the alley between Buildings 1 and 2. Hawker Pacific discovered the standpipe after removing a drum storage rack from this area. Prior to Hawker's tenure at the Site, this area had been used to store virgin oil. Investigation of the area lead to the discovery of a small, approximately 280 gallon abandoned underground tank and sump. With representatives of the LACFD and the CRWQCB present, the tank and sump were removed on August 19, 1991 (Law Environmental, 1991). The CRWQCB photographed the removal of the tank but labeled the photos as pictures of the sump removal. Copies of these photos are attached as Figures 7 & 8.

By letter dated January 20, 1992, Law Environmental submitted to the LACFD a work plan for the installation of a VES to remediate VOCs found in the tank/sump area soils. By letter dated June 18, 1992, the LACFD informed Hawker Pacific that the CRWQCB was now in charge of the soil remediation in the tank/sump area. Pursuant to the request of the CRWQCB, revised work plans were submitted by letters dated August 27, and November 5, 1992. By letter dated February 23, 1993, the CRWQCB approved the VES work plan subject to changes contained in the February 23 letter.

Shortly thereafter, by letter dated March 16, 1993, the United States Environmental Protection Agency ("USEPA") notified Hawker Pacific that USEPA considered Hawker Pacific responsible for the groundwater contamination in the San

Fernando Valley Basin ("SFVB") and demanded $16,801,295.43 in cleanup costs. A similar letter from the State of California followed shortly thereafter.

At the direction of Hawker Pacific, Law Environmental created a Summary of Findings dated April 6, 1993 which concluded that VOCs found in the tank/sump area did not contribute to the contamination of groundwater. Hawker Pacific submitted this report to USEPA shortly thereafter during a settlement meeting.

Hawker Pacific and the Wagners and Basinger retained Geraghty & Miller as consultants in the SFVB matter. In January 1994, Geraghty & Miller sampled the soil in the tank/sump area. The results showed that the soil was nondetect for PCE. In October 1995, Hawker Pacific received a letter from the CRWQCB requesting the implementation of the VES. This Report is submitted in response. The details of the investigations in the tank/sump are described below.

3.5 HISTORICAL FINDINGS IN UNDERGROUND TANK/SUMP AREA

In June 1990, a preliminary subsurface investigation was conducted between Building 1 and 2 by Active Leak Testing, Inc. (ALT), to assess the potential presence of soil impact from a 280-gallon single-wall steel underground tank and a small concrete-lined sump located east of the tank. The tank and sump were located beneath a 5-inch concrete slab and bermed area between Building 1 and 2. Both the tank and sump were present on Site prior to Hawker Pacific's occupancy and were not used by Hawker Pacific. ALT drilled two soil borings (AB-1 and AB-2) adjacent to the underground tank and one soil boring (AB-3) adjacent to the sump (Figures 9 & 10). Borings AB-1 and AB-2 were slant drilled to a depth of 20 feet. Boring AB-3 was slant-drilled to a depth of 15 feet and samples collected from AB-3 at depths of 1, 3, 5, 10, and 15 feet were analyzed by Diversified Analytical Services for total recoverable petroleum hydrocarbons (TRPH) using EPA Method 418.1. The sample collected from AB-3 at 5 feet was also

analyzed for VOCs using EPA Method 8240. Laboratory analyses of soil samples collected during the investigation detected the presence of petroleum hydrocarbons and VOCs in soils adjacent to the sump and tank. In particular, one soil sample collected from 5 feet bgs adjacent to the sump area yielded an analytic result of 555,000 µg/kg PCE. As described in Section 4.6, the validity of this result is questionable. Results of the June 1990 soil sampling conducted by ALT are shown in Table 2.

In August 1990, Law Environmental conducted a comprehensive subsurface assessment to delineate the vertical and horizontal extent of soil contamination in the tank/sump area. During the assessment, seven soil borings were drilled adjacent to the tank and sump area (Figures 9 & 10). B-1 was drilled to a depth of 80 feet, B-2 was drilled to a depth of 40 feet, B-5 was drilled a depth of 25 feet and Borings B-3, B-4, B-6 and B-7 were drilled to a depth of 20 feet. Soil samples were collected from the borings at 5-foot intervals. Soil samples selected by field screening methods (OVA readings and field observations) were analyzed by Curtis and Tompkins, Ltd. Laboratory for total petroleum hydrocarbons (TPH) and VOCs using EPA Methods 8015 and 8240, respectively.

Elevated levels of diesel-range hydrocarbons were detected in the 5-foot soil sample analyzed from Boring B-5, drilled adjacent to the sump. Elevated levels of PCE were detected in the 5-foot soil sample collected from Boring B-2, drilled adjacent to the tank. PCE, at 130,000 µg/kg, and other VOCs were detected in the 5-foot soil sample collected from Boring B-5, drilled next to the sump. The concentrations of the VOCs and the petroleum hydrocarbons decreased to low levels or were not detected with depth. The concentration of PCE decreased sharply to nondetect with depth. No PCE soil impact was observed below a depth of 30 feet bgs in any soil boring. Further, a clear correlation between the presence of PCE and that of TPH as diesel was observed (Figure 11). High concentrations of PCE were associated with high concentrations of TPH as diesel. Conversely, low concentrations of PCE were associated with low concentrations of TPH as diesel. The presence of PCE appears to be the result of PCE suspension or emulsion in

the petroleum hydrocarbon. Results of the August, 1990 soil sampling conducted by Law Environmental are shown in Table 3.

Law Environmental removed the sump and tank in August 1991. A hole in the bottom of the tank was discovered during tank removal. After the tank was removed from the excavation, Law Environmental collected one soil sample beneath the tank and one soil sample from the soil stockpile at the direction of LACFD inspector. The soil samples were analyzed by Curtis and Tompkins, Ltd., Laboratory for TPH and VOCs using EPA Methods 418.1 and 8240, respectively. The presence of TPH and low levels of PCE were detected in the two samples. Following tank removal, the stockpiled soil was used to backfill the excavation. Results of the August, 1991 soil sampling conducted during the tank/sump removal are shown in Table 4.

In the tank closure report, Law Environmental recommended installing a VES to remediate the contaminated soils at the site. On June 1, 1992, following LACFD approval of the proposed remedial action, Law Environmental began installation of the VES. Four vapor extraction wells (VW-1 VW-2, VW-3, and VW-4) were installed to a depth of 25 feet at the locations shown on Figures 9 & 10. Soil samples were collected at depths of 10 and 20 feet from each of the well borings. The samples were analyzed by American Analytics for VOCs using EPA Method 8240. The results of the laboratory analysis indicated a low concentration of PCE in the soil sample collected from VW-2 at a depth of 10 feet. VOCs were not detected in the other samples. Results of the soil sampling conducted by Law Environmental during the vapor well installation are shown in Table 5.

On June 18, 1992, the LACFD notified Law Environmental that the CRWQCB was assuming the lead agency status for the project. Law Environmental received a letter from the CRWQCB dated July 14, 1992 indicating that Law Environmental should not commence work on site until a revised workplan was reviewed and approved. Law

Environmental suspended work at the site pending CRWQCB approval of the revised work plan.

3.5.1 Law Environmental Conclusions

In a summary of findings dated April 6, 1993, Law Environmental concluded that there was no evidence that chlorinated solvent soil contamination was present at this facility below a depth of 30 feet based on the results of their assessments, and that there was no evidence that this small concentrated volume of soil impact resulted in groundwater impact.

Elevated levels of chlorinated solvents were detected in four of fifteen soil samples obtained from the 5-foot interval of boring drilled in the area of the former underground tank and sump, between Building Nos. 1 and 2. However, soil samples analyzed from deeper intervals in the borings showed a dramatic and significant decrease in solvent concentrations. This pattern indicates that the spill had a limited vertical migration.

Law Environmental concluded that the geometry of the plume is not indicative of a persistent or continuous leak over an extended period of time, but rather of an isolated surficial spill or near-surface release which did not have significant horizontal or vertical migration.

During at least the past 17-year period, the surface of the tank and sump area has reportedly been covered with a 5-inch-thick concrete paving. A review of approximately 30 years of groundwater level information from the surrounding LAFCD wells indicates that groundwater has been at depths greater than 150 feet below ground surface throughout this time period. This is about 130 feet below the PCE-impacted soil delineated by Law Environmental's assessments.

Law Environmental concluded that there is no evidence that the chlorinated solvents in soils in the area between Building Nos. 1 and 2 had contributed to the regional groundwater contamination.

3.6 GERAGHTY & MILLER'S CONCLUSIONS REGARDING THE ALT AND LAW ENVIRONMENTAL INVESTIGATIONS

Based on the data generated by ALT and Law Environmental, as well as findings by the CRWQCB, concerns about PCE-impacted soil have been confined to the area between Building Nos. 1 and 2. The low levels that were found fell below California State Water Resources Control Board action levels (Law Environmental, 1993). As described in Section 5 of this report, Geraghty & Miller conducted a subsequent drilling and sampling program designed to measure the worst-case distribution of PCE in the Site subsurface. Boring G-1 was drilled through the location of the former UST, G-2 was drilled as close as possible to the location of the former sump, and G-3 was drilled about 10 feet east of G-2 to address the eastern lateral extent of any soil impact. A total of 18 soil samples were collected and analyzed for PCE. At the areal center of the problem area, as defined by Law Environmental, eight samples were collected and analyzed at depths as deep as 82 feet bgs.

Results of the subsequent Geraghty & Miller drilling and soil sampling program, with continuous core borings located in the locations of the former tank and sump, yielded no detectable concentrations of PCE in soil at any depth in any of three borings. PCE has a relatively high sorption coefficient (K_{OC}) and relatively low biodegradability. Thus, if PCE had extended to greater depths in the subsurface, a "trail" of PCE to extended depths in the near-surface coarse-textured soils would be expected to exist. This trail could not be detected, even in samples taken from borings placed directly beneath the former tank and sump.

Sampling and laboratory results for the investigations in the tank/sump removal area between Building Nos. 1 and 2 have yielded a confusing trail of data that is not well documented. In June of 1990, ALT collected a soil sample from 5 feet bgs in the location of the former sump. The sample reportedly had a PCE concentration of 555,000 µg/kg. This was a single sample from a single location. No additional high, or even moderately high, values were encountered in the adjacent areas. The 555,000 µg/kg result can not be confirmed and validated because the laboratory records were reportedly destroyed in the 1993 Northridge Earthquake.

There is no way to clarify the discrepancies documented in the ALT report. Additionally, the original laboratory methodologies, results, and QA/QC procedures can not be reviewed to verify the validity of the 555,000 µg/kg result. Geraghty & Miller considers the validity of the 555,000 µg/kg result reported in the ALT report to be of questionable value in interpreting distribution of PCE in the Site subsurface.

Law Environmental subsequently detected PCE in a soil sample, at a concentration of 130,000 µg/kg, directly adjacent (approximately 2 feet northwest) of the location where PCE was previously detected at 555,000 µg/kg by ALT. Concentrations of PCE in soil decreased sharply and rapidly with distance from a very localized area of high PCE concentrations located directly beneath the formerly bermed drum storage area. Together, the ALT and Law Environmental data show an impacted volume of soil with very localized high concentrations of PCE. The impacted soil was confined to the area between Building Nos. 1 and 2 and is limited in vertical and lateral distribution.

Subsequent Geraghty & Miller soil sampling results are consistent with the Law Environmental soil sampling results. Soil sampling results from Law Environmental reveal a limited release confined to a relatively small volume of soil. That volume of impacted soil was excavated and stockpiled at the Site for a period of time (probably about two

weeks) during summertime when temperatures are normally highest. The excavation removed the soil volume where the reported 555,000 µg/kg and 130,000 µg/kg results were encountered. During that time, the small mass of PCE that existed in the locally impacted area was exposed to volatilization. In addition, some dilution by mixing of the soil during the tank excavation and cavity backfilling process likely occurred. While not explicitly mentioned in the Law Environmental tank excavation report (Law Environmental, 1991), clean fill would have to have been added to the cavity to make up the volume of the underground tank (approximately 280 gallons = 37.4 ft^3) removed, providing further dilution of the limited PCE-impacted soils.

The concentrations of PCE greater than 50 µg/kg (in association with petroleum hydrocarbon detections), as conservatively delineated by Law Environmental, were confined to a spatially limited volume less than 25 feet deep by 25 feet wide (north to south) by 34 feet (east to west) long (Figure 11). The PCE concentrations decrease rapidly with distance away from the point of highest detectable PCE concentrations. The particularly high concentrations reported at the approximate 5 foot bgs depth may have been the result of sampling a small mass of DNAPL suspended in the waste oil petroleum hydrocarbon.

The Law Environmental and Geraghty & Miller soil sampling results are also consistent with a small-volume spill characterized by small amounts of PCE suspended or in solution with a petroleum hydrocarbon. Stated more simply, there was likely a small-volume waste oil spill which had a small amount of PCE mixed in it. Examination of the spatial distribution of constituents at the Site, as delineated by Law Environmental (Figure 11) shows a correlation between the PCE concentration data and the TPH as diesel data. Concentrations of PCE are correlated with elevated concentrations of TPH as diesel and Toluene. Low concentrations of PCE are correlated with low concentrations of TPH as diesel and Toluene. Elevated concentrations of PCE were detected in sample locations where elevated concentrations of TPH as diesel and Toluene were detected. In some

cases, at the edge of the plume as delineated by Law Environmental, low levels of PCE were found in association with nondetectable concentrations of TPH as diesel or Toluene. This is attributable to the increased biodegradability, particularly at the oxygenated perimeter of a soil plume of limited mass, of nonchlorinated hydrocarbons over the PCE.

Geraghty & Miller, as discussed above, conducted additional soil sampling and soil gas sampling activities. These activities are described in the following section. Geraghty & Miller's data, like that collected by ALT and Law Environmental, indicate that insufficient mass was released to impact groundwater.

4.0 RECENT INVESTIGATION ACTIVITIES & METHODOLOGIES

4.1 ADDITIONAL SOIL BORINGS AND SAMPLING

In January, 1994, Geraghty & Miller advanced three additional soil borings (G-1, G-2, and G-3), at the locations indicated on Figures 9 &10. The borings were designed to give an even distribution of data from beneath the suspected source areas, to confirm previous Site chemical data, and to fill in data gaps from previous work. The boring depths were designed to penetrate within and below the hydrocarbon-impacted soils as they were defined by previous investigations and to provide geologic information about the underlying material.

The location of the boring G-1 was designed to address the problem beneath the sump area identified by data from borings AB-3 and B-5. The G-1 boring was advanced to refusal at a depth of 86 feet below ground surface (bgs). Soil samples were collected from boring G-1 for chemical analysis at depths of 5, 10, 20, 31, 51, 66 and 81 feet bgs. All samples were nondetect for PCE.

Boring G-2 was located to address the potential source of the removed UST and results from samples in boring B-2. Boring G-2 was advanced to a depth of 41 feet. Samples were collected from boring G-2 for chemical analysis at depths of 5, 10, 20, 30, 35 and 40 feet bgs. All samples were nondetect for PCE.

Boring G-3 was located to address and identify constituent distributions at the east end of the open space between Buildings Nos. 1 and 2. Boring G-3 was advanced to a depth of 25 feet. Samples were collected from boring G-3 for chemical analyses at depths of 10 and 20 feet bgs. Both samples were nondetect for PCE.

4.1.1 Drilling Method

The presence of lithologic and hydrologic changes which may impede or eliminate downward migration of liquids and vapors could not be determined with the Site data set which existed prior to January, 1994. Continuous coring of soils was used in January, 1994, to identify important textural and soil moisture features which could effect liquid and vapor migration. Sonic drilling was the drilling method selected. Sonic drilling is a relatively fast and reliable method for obtaining continuous core, could simultaneously be used to emplace the neutron probe access tube, and has been accepted for use at a number of U.S. Department of Energy sites (Sandia National Labs, Hanford, Rocky Flats).

4.1.2 Sampling Methods

Split-barrel samplers were used during the continuous coring operations. Upon opening of the split barrel sampler, the core was marked with a visible indication of the boring number and depth interval (wooden blocks with marker pen or some other suitable method), and photographed. The core was inspected by a geologist and a written descriptive log prepared using the Unified Soil Classification system. The geologist noted color, apparent qualitative moisture content (i.e., dry, moist, or wet) and attempted collection of tensiometer readings where soil texture permitted. The geologist took special care to note changes of moisture content with changes in lithology. Observations were supplemented with samples for gravimetric soil moisture determination where appropriate. Samples were collected as soon as possible after the core was brought to the surface. Written descriptions were noted, along with moisture content, pore pressure (as collected), sample numbers and the results of field screening.

At the discretion of the geologist, specimens of selected intervals which documented the presence of fine-textured layers or potentially perching conditions with wet layers over fine-textured layers were collected and recorded in the log.

Where deemed appropriate by the field geologist, samples of the continuous core were collected in addition to the drive samples described under traditional sampling methods for on-Site chemical field screening. Enough material to substantially fill a one-gallon ziploc bag was collected and closed. After approximately 15 minutes, the head space from the bag was injected into the field gas chromatograph. Results were entered on the field log at the appropriate depth and are shown in Table 6.

4.2 PHYSICAL PARAMETERS

No physical parameters were measured in prior investigations. In order to properly characterize the Site for future potential analysis of risk and design of remediation activities, the following parameters were determined for a suite of representative Site soil types:

1. Distribution of lithologies
2. Bulk density (dry bulk density in geotechnical parlance)
3. Percent organic carbon
4. Total porosity
5. Soil moisture distribution
6. Soil moisture characteristics
7. Hydraulic permeability
8. Laboratory solvent permeability
9. Field air permeability

4.3 DRUMMING SAMPLING MATERIAL

After continuous core material was logged, photographed and sampled, the remaining material was deposited on-Site in clean drums. Based on analysis of the Site soil

samples, it was determined that the waste soil material could be characterized as non-hazardous and the waste soils were disposed of as such.

4.4 TRADITIONAL SAMPLING METHODS

Soil samples (18" length by 2" diameter) were collected using traditional brass sleeves appropriate for laboratory chemical and physical analysis. Three brass-ringed samples (6" x 2") were retrieved from each drive sample. The middle and lower ring were capped, taped, labeled and sealed immediately and stored in a cooler on blue ice. The lower ring was field-screened for PCE, Toluene and Benzene as described below. Results of field screening were entered on the log for the appropriate depth. The two other samples were retained for possible transfer to a state certified laboratory. The geologist, at his discretion, requested additional drive samples as appropriate in the field at changes in lithology or in areas of suspected constituent impact.

4.5 FIELD SCREENING SAMPLES

The lower driven sleeved sample from each depth was used for field screening, as well as bagged samples from the continuous core sampling. Sleeved samples were capped and taped immediately to prevent the loss of vapors. After a brief period of equilibration (15 minutes), a gas sample was obtained by inserting a syringe through the cap and drawing a sample. Gas samples were collected from bagged samples from continuous core by inserting a syringe into the headspace and drawing a sample. The gas sample was immediately injected into a portable gas chromatograph on Site for field screening. The on-Site gas chromatograph was calibrated on the day of the analyses according to manufacturer's specification and QA samples were used to insure proper functioning throughout the field screening. Samples were screened for PCE, Toluene and Benzene to assist in identifying zones appropriate for collecting soil samples for laboratory chemical analysis.

4.6 INSTALLATION OF NEUTRON PROBE ACCESS TUBES AND NEUTRON LOGGING

The sonic drilling technique was also used to emplace a neutron access tube. A good annular seal is obtained with the technique because the pipe is advanced by vibrational energy which acts to settle and compact soil particles tightly around the drill rod. Soil particles displaced by the pipe are forced to the outside of the pipe, also increasing bulk density at the steel/soil interface. The lack of grout improves the sensitivity of the neutron probe over access tubes installed in wider hollow-stem auger borings with grout. It was desirable to use the minimum diameter of pipe that could later be perforated at intervals selected based on neutron logging data. The subsequent perforations later served as fixed soil gas monitoring positions. NPAT was installed to the bottom of boreholes G-2 and G-3 and to a depth of 84 feet bgs in borehole G-1.

Neutron logs of each hole were collected at several time intervals after the drilling. Logs consisted of 16-second counts with a Campbell Pacific Nuclear (CPN) 50 mCi device. Counts were taken every foot down to the bottom of each NPAT, and again every foot to the top of each NPAT. The data was resorted so that two counts from each depth were compared to make sure there was no shift due to logging at any wrong depths. The average of the two counts at each depth was reported as the final count. Neutron count standards were taken in a case shield before and after each log for later possible use in count ratios, and to review any instrument drift which occurred during logging activities.

4.7 COMPLETION OF THE NPATs AS FIXED POSITION SOIL GAS SAMPLERS

The emplaced NPAT was later perforated at discrete depths and used as a fixed point gas sampler system. The NPAT was perforated one month after drilling using explosives to perforate the steel access tube in place. The explosives incorporated 1" blasting caps which created two sampling holes at each sampling depth radially spaced

180° apart. Perforations were placed at depths of approximately 8, 16, and 30 feet bgs in borehole G-2; perforations were placed at depths of approximately 8 and 12 feet bgs in borehole G-3. In addition, soil gas samples were collected from the bottom of the NPATs in boreholes G-1, G-2 and G-3.

Sampling intervals were isolated by inflatable packers placed above and below the sampling depth of interest. Soil gas sampling results are shown by depth in Figure 12.

Soil gas sampling positions were selected to facilitate worst-case soil gas sampling in soil layers of relatively high effective air permeability as indicated by the geologic logs, at interfaces where coarse-textured soils were observed above moist or wet fine-textured soil layers, and at the maximum depth of the NPAT.

5.0 INVESTIGATION RESULTS

5.1 ADDITIONAL SOIL BORINGS AND SAMPLING

Using the sonic drilling technology, the continuous coring method was used to develop a detailed lithologic log for borings G-1, G-2, and G-3. The individual boring logs are included as Appendix A. Based on these detailed logs, a geologic cross-section was developed (Figure 13). The cross-section and boring logs depict layers of coarser and finer sands that are interlayered down to the maximum depth drilled of 86 feet at boring G-1. A layer of silty material with high moisture content was identified in boring G-1 at approximately 66 feet bgs. As described in section 7.3.2.1.1, this layer was later found to correlate with a similar layer noted in the lithologic and geophysical logs developed in the investigation of the subsurface of the LAUSD across Sherman Way 100 feet to the north (Lidmark Engineering, 1995).

The analytical results for the soil samples collected from borings G-1, G-2, and G-3 are summarized in Figure 1. As seen on Figure 1, no PCE was detected in the soil from any of the borings at any depth. The laboratory analytical data are included in Appendix B.

5.2 PHYSICAL PARAMETERS

Table 7 summarizes the physical tests that were performed on soil samples that were submitted from borings G-1, G-2, and G-3 to Daniel B. Stephens & Associates, Inc. Laboratory.

Table 8 presents the results for the initial moisture content, dry bulk density, and calculated porosity. The initial moisture content is presented in both a gravimetric and volumetric form. The measured dry bulk density was used, along with an assumed particle density of 2.65 g/cc to calculate total porosity.

Table 9 summarizes the results obtained for the saturated hydraulic conductivity tests. The test methodology (constant head or falling head) used to determine the hydraulic conductivity was selected according to ASTM methodologies. The second column presents the hydraulic conductivity obtained using the indicated methodology.

Table 10 summarizes the moisture characteristics of the initial drainage curve. The second column of the table indicates the pressure head, in centimeters of water, used during the test, and the third column presents the moisture content obtained from the test.

Table 11 summarizes the particle size characteristics of the samples submitted. The second column, d_{10}, gives the particle diameter for which 10% of the total particles have a diameter smaller than the diameter presented. The third column, d_{50}, gives the median particle diameter, half of the particles have a diameter smaller and half have a diameter larger than the given diameter. The fourth column, d_{60}, gives the particle diameter for which 60% of the total particles have a diameter smaller than the diameter presented.

The analytical data for all of the physical testing performed by Daniel B. Stephens & Associates Inc. are included in Appendix C.

5.3 FIELD SCREENING SAMPLES

Table 6 presents the results of the field gas chromatograph analyses for borings G-1, G-2, and G-3. The first two columns of Table 6 identify the well designation and depth of sample. The last three columns present the analytical results for TCE, Toluene, and PCE obtained from each sample. The majority of the results are non-detect. PCE was detected in nine of the samples screened.

5.4 INSTALLATION OF NEUTRON PROBE ACCESS TUBES AND NEUTRON LOGGING

Table 12 presents the neutron logging data recorded from 9 different logging events. The first column indicates the depth at which a count was taken. The balance of the columns represent an individual logging event, and the count obtained at each depth. The top 5 rows document that the same instrument was used in each case and that the instrument calibration did not drift. The next row indicates which access tube was logged and the 7th row indicates the count period used for each test.

5.5 COMPLETION OF THE NPATs AS FIXED POSITION SOIL GAS SAMPLERS

Figure 12 presents the soil gas results obtained for the fixed position soil gas samplers on three separate days. The figure shows the depths at which each sample was taken, and the result obtained from each sampling in µg/L. The highest results were obtained on the same day from the deepest samples in G-2 and G-1, approximately 40 ft. and 84 ft. respectively.

The soil gas analytical data from Calscience Environmental Laboratories Inc. are included in Appendix D.

6.0 EVALUATION OF SOIL CLEANUP LEVELS

The evaluation procedures in the Interim Guidance for Remediation of VOC Impacted Sites (the "Guidance"), as promulgated by the California Water Quality Control Board in Los Angeles in January, 1995, were utilized to calculate soil cleanup levels, based on physical and chemical parameters observed at the Site during Geraghty & Miller's field investigations. Calculated soil cleanup levels were then compared against total soil concentrations derived from equilibrium phase partitioning relationships and soil gas measurements taken at the Site by Geraghty & Miller. As will be detailed in this report section, Site soil concentrations fall below soil cleanup levels calculated in accordance with CRWQCB guidance.

6.1 APPLICATION OF THE CRWQCB VOC CLEANUP EVALUATION GUIDANCE TO THE SITE

The method of evaluation closely followed the methods as described in the Guidance and consisted of 6 steps.

Step One involved calculating an equivalent soil matrix concentration based on soil gas concentrations measured at the Site. As cited in the Guidance, "Rosenbloom et al. (1993) indicated that soil gas concentrations were found to be more meaningful than soil matrix for estimating total soil concentrations at an Arizona Superfund site. Data obtained from San Fernando Valley Superfund Sites also support this assertion." The Guidance utilizes the following equation, based on work by Hydro Geo Chem (1989), to calculate total concentrations in soil from soil gas concentrations:

$$C_T = C_g \times \left[\theta_w + (n - \theta_w) \times K_H + p_b \bullet f_{oc} \bullet K_{oc}\right] \div (p_b \bullet K_H),$$

where,

C_T = Total soil concentration in µg/kg,

C_g = Soil gas concentration in µg/l,

θ_w = soil water content (unitless),

f_{oc} = soil organic content (unitless),

K_{oc} = organic carbon partition coefficient (ml/g),

p_b = soil bulk density (g/ml),

n = soil porosity (unitless), and

K_H = Henry's Law constant (unitless).

Site-measured, average values of soil water content, soil bulk density, and porosity were utilized in the calculations. Each Site-specific soil gas measurement was used to calculate an equivalent soil matrix concentration. Since the organic carbon content was not measured at the Site, two calculations of total soil concentrations were made using values for f_{oc} of .001 and .00247. It is Geraghty & Miller's experience that f_{oc} is typically quite low in the semi-arid soils such as found at the Site. A value for f_{oc} of .001 is typical of these environments. The second value used was represented in the Guidance as the average of 55 soil samples taken from throughout the Los Angeles area. Values for the K_{oc} and K_H were taken from Table 1 of the Guidance, Appendix A. Total soil concentration values calculated from Site soil gas measurements are shown in Tables 13 and 14 for f_{oc} values of .001 and .00247, respectively.

Step Two consisted of evaluating the depth to groundwater at the Site. Groundwater elevation measurements at the LAUSD site, immediately north across Sherman Way from the Site, were assumed to be representative of groundwater conditions at the Site. Groundwater depth below ground surface was measured to be 237.5 feet at the quarterly monitoring measurement conducted in the first quarter of 1995 (the only data

available at the time of this writing). No perched water conditions were encountered during any of the investigations at the Site or at the LAUSD site.

Step Three was an evaluation of the lithologic makeup of the geologic profile as described in the Guidance. This consisted of determining the proportion (percent) of lithologies represented at the Site. Stated more simply, in order to implement the Guidance evaluation, the percent thickness of the geologic profile made up of gravel, sand, silt and clay must be determined. The continuous core sampling and logging technique was used when conducting the Site investigation. This facilitated detailed, Site-specific knowledge of the lithologic sequence in the subsurface down to the depth of drilling (86 feet bgs). Based on inspection of the geophysical and lithologic logs recorded during the LAUSD investigation, it was concluded that the lithologic proportions of the upper portion of the Site geologic profile could be reasonably extrapolated to the portion of the Site geologic profile between the deepest point of drilling (86 feet) and groundwater (237.5). Based on an evaluation of the composite geologic cross section interpreted by the project geologist and an evaluation of the individual geologic logs, the following proportions were assigned to the lithologic categories, for the entire geologic profile between ground surface and the depth of groundwater beneath the Site, utilized in the Guidance method for evaluating VOC cleanup levels in site soils:

Gravels - 29%
Sand - 54%
Silt - 17%
Clay - 0%

The above evaluation of Site lithologic proportions was then applied to each specific depth of interest. Depths of interest were selected at depths of 7, 15, 30, 40 and 80 feet to evaluate PCE migration impact to groundwater over the range of depths at which soil gas concentrations were measured during the Site investigations. The lithologic

proportional thickness between the depth of interest and groundwater was calculated by subtracting the thickness of the lithologic categories between ground surface and the depth of interest from the above total.

Step Four consisted of applying the methodology for calculating depth-specific composite attenuation factors (AF) as described in the Guidance. In a telephone conversation of January 16, 1995, Mr. Yue Rong of the CRWQCB (author of the Guidance methodology), indicated that it would be most appropriate to use the AF listed in Table 2 on page 8 of the Guidance and calculate soil cleanup levels for the Site using the methodology as described in the example on the same page. The equation used to calculate the composite AF at a given depth of interest using the method of lithologic proportions and AF's listed in Table 2 of the Guidance is:

AF_{DOI} = (Gravel AF x Gravel depth %) + (Sand AF x Sand depth %) + (Silt AF x Silt depth %) + (Clay AF x Clay depth %).

where,

AF_{DOI} = composite attenuation factor (AF) at a given depth of interest (DOI).

Attenuation factors calculated for the 7, 15, 30, 40, and 80 foot depths bgs are shown in Table 15.

Step Five consisted of calculating the Site-specific, depth specific cleanup levels according to the Guidance methodology. The equation for calculating the soil PCE cleanup level at a given depth of interest is:

$$C_{DOI} = AF_{DOI} \times MCL_{PCE},$$

where,

C_{DOI} = Soil PCE cleanup level at given depth of interest (ppb),

MCL_{PCE} = Maximum groundwater contaminant limit for PCE (5 µg/l).

Cleanup levels calculated for the Site for the 7, 15, 30, 40, and 80 foot depth bgs are shown in Table 15.

The Sixth and final step consists of comparing the Site-specific concentrations of PCE to the cleanup levels calculated using the methodology of the Guidance. In all cases and at all depths the Site-specific soil concentrations, as calculated from Site soil gas measurements, fall below soil cleanup levels calculated in accordance with the CRWQCB Guidance.

Based on implementation of the above-described methodology, conducted in accordance with the Guidance by the CRWQCB, it is concluded that Site soil concentrations of PCE are low, do not represent a significant threat to groundwater, and require no further remedial action or cleanup.

7.0 DISCUSSION

Based on the sitewide investigations performed by Law Environmental and Active Leak Testing, it has been determined that concerns about PCE-impacted soil are confined to the area between Building Nos. 1 and 2. The low levels that were found fell below California State Water Resources Control Board action levels (Law Environmental, 1993). No PCE impacted soil has ever been observed below 30 feet bgs. Analysis of the most recently collected soil samples indicates nondetect for PCE at all depths sampled in three borings located to penetrate through the originally determined source areas.

Evaluation of the Site soil concentrations using CRWQCB guidance indicates that PCE levels are low, do not represent a significant threat to groundwater, and require no further remedial action or cleanup.

7.1 ALT SAMPLE PROBLEMS

Sampling and laboratory results for the investigations in the tank/sump removal area between Building Nos. 1 and 2 have yielded a confusing trail of data that is not well documented. In June of 1990, ALT collected a soil sample from 5 feet bgs in the location of the former sump. The sample reportedly had a PCE concentration of 555,000 µg/kg. This was a single sample from a single location. No additional high, or even moderately high, values were encountered in the adjacent areas. The 555,000 µg/kg result can not be confirmed and validated because the laboratory records were reportedly destroyed in the 1993 Northridge Earthquake (personal communication with Diversified Analytical Services, 1995). The text of the ALT report never actually mentioned detected concentrations of PCE (Figure 14). Only examination of the reported laboratory data reveals the PCE result. The two sources of information regarding subsurface concentrations of PCE are in conflict. As a result, there is no way to clarify the discrepancy documented in the ALT report. Additionally, the original laboratory

methodologies, results, and QA/QC procedures can not be reviewed to verify the validity of the 555,000 µg/kg result.

Coincidentally, the same report shows a Toluene concentration of 555,000 µg/kg. No laboratory QA/QC protocols were described in the report. Duplicate analysis to verify the high result was not performed on the sample. Chain of custody records indicate that TPH analysis was performed using EPA Method 418.1, a methodology often criticized as suitable as a screening method only and prone to overestimation of TPH levels in soils. ALT submitted only this one sample for VOC testing. No additional samples nor duplicates were submitted to allow confirmation of this individual result.

The sample was physically described by the geologist as a light to medium brown sand, poorly graded (SP), micaceous, moist, with a slight odor.

7.2 LAW ENVIRONMENTAL INVESTIGATION

In August 1990, Law Environmental conducted an investigation to delineate the vertical and horizontal extent of soil constituents at the Site. Seven soil borings were drilled in the tank and sump area (Figures 9 & 10). PCE was detected in a soil sample (at a concentration of 130,000 µg/kg) directly adjacent (approximately 2 feet northwest) of the location where PCE was previously detected at 555,000 µg/kg by ALT (Figure 15). Concentrations of PCE in soil decreased rapidly with distance from a very localized area of high PCE concentrations located directly beneath the formerly bermed drum storage area. The data and Law Environmental interpretation showed an impacted volume of soil with very localized high concentrations of PCE. The impacted soil was confined to the area between Building Nos. 1 and 2 and had a limited vertical and lateral distribution (Law Environmental 1993).

Law Environmental concluded that only a localized area, with limited vertical and lateral distribution was impacted and that it did not pose a threat to groundwater (Law Environmental 1993). Figure 11 shows the east-west cross-section of the plume (PCE greater than 50 µg/kg). When compared to the depth to water, 237 feet, this is a very small volume (Figure 16).

7.3 SUMP AND TANK REMOVAL

The sump and tank were removed in August of 1991 (Law Environmental, 1991). Soil removed during the excavation was stockpiled on Site and then later used to backfill the tank cavity after tank and sump removal. A soil sample from beneath the bottom of the tank cavity showed a PCE level of 18 µg/kg. A backhoe soil sample taken from the stockpiled soil showed a PCE concentration of 7 µg/kg. While not stated in the Law Environmental report, the soil was presumably stockpiled for about two weeks, the period of time required to receive results from the laboratory for the sample from beneath the bottom of the tank cavity.

In June 1992 after the tank removal, Law Environmental installed a series of vapor extraction wells in order to initiate a remedial action plan. Soil samples taken during installation of the vapor extraction wells indicated only one detection of PCE out of eight samples taken from four vapor extraction wells. PCE was detected at 31 µg/kg in a sample taken 10 feet bgs during the installation of vapor extraction well VW-2.

7.4 RECENT INVESTIGATIONS

In 1994, Geraghty & Miller drilled three additional boreholes and installed neutron probe access tubes (NPATs)and soil gas sampling ports. The purpose of the investigation was to confirm the Law Environmental soil sampling results, to assess the aqueous

mobility of PCE at the Site, and to assess the magnitude and distribution of PCE in the vapor phase at the Site.

Geraghty & Miller conducted a drilling and sampling program designed to measure the worst-case distribution of PCE in the Site subsurface. Boring G-1 was drilled through the location of the former UST, G-2 was drilled as close as possible to the location of the former sump, and G-3 was drilled about 10 feet east of G-2 to address the eastern lateral extent of any soil impact. A total of 18 soil samples were collected and analyzed for PCE. At the areal center of the problem area, as defined by the Law Environmental, eight samples were collected and analyzed at depths as deep as 81 feet bgs.

7.4.1 Soil Sampling Results Indicate No Current Impact

Results of the Geraghty & Miller drilling and soil sampling program yielded no detectable concentrations of PCE in soil at any depth in any of the three borings. If PCE had extended to greater depths in the subsurface, a "trail" of PCE to extended depths in the near-surface coarse-textured soils would be expected to exist. This trail could not be detected, even in samples taken from borings placed directly beneath the former tank and sump.

7.5 LIMITED NATURE OF THE RELEASE

Geraghty & Miller soil sampling results are consistent with the Law Environmental soil sampling results. Soil sampling results from Law Environmental reveal a limited release confined to a relatively small volume of soil. That volume of impacted soil was excavated and stockpiled at the Site for a period of time (probably about two weeks) during summertime when temperatures are normally highest. The excavation removed the soil volume where the 555,000 µg/kg and 130,000 µg/kg results were encountered. During that time, the small mass of PCE that existed in the locally impacted area was

exposed to volatilization. In addition, some dilution by mixing of the soil during the tank excavation and cavity backfilling process likely occurred. While not explicitly mentioned in the Law Environmental tank excavation report (Law Environmental, 1991), clean fill would have to have been added to the cavity to make up the volume of the underground tank (approximately 280 gallons = 37.4 ft^3) removed, providing further dilution of the limited PCE-impacted soils.

The concentrations of PCE greater than 50 µg/kg (in association with petroleum hydrocarbon detections), as delineated by Law Environmental, were confined to a spatially limited volume less than 25 feet deep by 25 feet wide (north to south) by 34 feet (east to west) long. The PCE concentrations decrease rapidly with distance away from the point of highest detectable PCE concentrations.

7.6 NATURE OF THE RELEASE

The Law Environmental and Geraghty & Miller soil sampling results are also consistent with a small-volume spill characterized by small amounts of PCE suspended and in solution with a petroleum hydrocarbon. Stated more simply, there was likely a small-volume waste oil spill which had a small amount of PCE mixed in it. The greater concentrations observed in the limited volume of soil just below the sump may represent small globules of free phase PCE emulsified or suspended in the released diesel-like petroleum hydrocarbon. Examination of the spatial distribution of constituents at the Site, as delineated by Law Environmental (Figure 11) shows a correlation between the PCE concentration data and the TPH as diesel data. Concentrations of PCE are correlated with elevated concentrations of TPH as diesel and Toluene. Low concentration of PCE are correlated with low concentrations of TPH as diesel and Toluene. Elevated concentrations of PCE were detected in sample locations where elevated concentrations of TPH as diesel and Toluene were detected. In some cases, at the edge of the plume as delineated by Law Environmental, low levels of PCE were found in association with

nondetectable concentrations of TPH as diesel or Toluene. This is attributable to the increased biodegradability of nonchlorinated hydrocarbons over the PCE.

7.7 LIMITED LEACHING POTENTIAL

Neutron probe logging results demonstrate that surface infiltration of precipitation is negligible in the presence of the concrete surface seal and does not provide a mechanism to facilitate aqueous transport of PCE. This is consistent with the fact that currently, and for approximately the past 17 years, the area has been covered with a 5-inch thick concrete cover (Law Environmental 1993). Only during the time the tank/sump excavation was taking place and for a one-year period of time after the Geraghty & Miller drilling activities, were portions of the soil exposed at the surface without the complete concrete cover.

7.8 RECENT SOIL GAS SAMPLING

As with the Geraghty & Miller soil sampling program, an attempt was made to obtain the worst-case soil gas samples. Based on knowledge of the subsurface stratigraphy gained from continuously logging the sampled boreholes, perforations to facilitate soil gas sampling were installed at depths which corresponded to previous high detections of PCE, at interfaces between fine- and coarse-textured soil materials, and at interfaces between soils of high and those of low water content. The purpose of these sample locations was to maximize the probability of detecting the highest concentrations of vapor-phase PCE.

Low levels of vapor phase PCE were detected in the Site subsurface during the 1994 Geraghty & Miller investigation. Detections of vapor PCE in the Site subsurface ranged from 1.1 to 41 µg/L. The deepest detection of vapor phase PCE was at 84 feet at a vapor concentration of 39 µg/L. Concentrations of soil vapor PCE generally showed no

spatial correlation with the previously observed high soil sample concentrations. While no clear pattern can be seen in the soil vapor data, there is a general increase in concentration with depth, albeit all at low concentration levels. PCE concentrations are higher on the western side of the patio area than on the eastern side, a distance of approximately 40 feet. The soil vapor data is not consistent with what would be expected from a source of considerable mass or from a systematic release of PCE over an extended period of time. Geraghty & Miller believes that the coarse and laterally extensive soils which exist in and around the Site, lateral diffusion and temperature-driven lateral advection of PCE vapors could account for the low concentrations and the erratic spatial distribution of PCE vapors in the Site subsurface.

7.9 SITE GEOLOGY

Based on the borings drilled in the small open area of the Site, a cross sectional depiction of the near-surface Site geology was interpreted by Geraghty & Miller (Figure 13).

Depth to groundwater is very deep, approximately 237 feet bgs. Continuous coring was used to define a detailed stratigraphy of the Site subsurface. A fine-textured, high moisture content lens was identified in boring G-2 at 40 feet bgs (67% saturation) and in boring G-1 66 feet bgs (100% saturation). Inspection of the geologic and geophysical logs from the recent investigation of the LAUSD site shows that a similar fine-textured, moist lens was observed at a similar depth (65-70 feet bgs) approximately 200 feet north of the Hawker Pacific patio area (Figures 17 to 18). At the scale of the site, the fine textured lens at approximately 66 feet is interpreted to be laterally continuous. No free water or perched water was encountered during the drilling and sampling activities. This lens would act as a barrier to downward migration of soil gas and as conduit above which soil gas could migrate laterally. Based on the depositional environment at the Site, it is reasonable to anticipate that additional low-permeability lenses exist in the interval between the depth of deepest drilling and the water table,

approximately 237 feet bgs. This is confirmed by examination of the gamma-ray geophysical logs recorded immediately north across Sherman Way during the LAUSD investigation (Lindmark Engineering, 1995).

8.0 SUMMARY OF CONCLUSIONS

Based on evaluation of the data which has been collected to date at the Site and presented within this report, Geraghty & Miller concludes:

- The Soil Vapor Extraction System should not be activated. Recent soil samples taken from three borings between Building Nos. 1 and 2 were nondetect for PCE at all depths in all borings. Thus, there is very little, if anything, to gain in terms of mass removal of PCE from the Site subsurface. Further, if offsite sources of PCE exist, the depression of subsurface pressure at the Site could create an advective sink towards which offsite vapors would migrate. The result would be dragging constituents from offsite onto the Hawker Pacific property with the potential for contaminating Site soils.

- Based on implementation of CRWQCB Interim Guidance for Remediation of VOC-Impacted Sites (January, 1995), Site soil concentrations of PCE do not represent a threat to groundwater and require no further remedial action or cleanup.

- Historic PCE impact to the Site subsurface soils is localized and minimal. No detectable concentrations of PCE in soils have been detected below a depth of 30 feet bgs in three separate investigations.

- The distribution, magnitude and makeup of the constituents detected in the Site subsurface are consistent with a nonsystematic release of a relatively small mass of PCE which was released in association with a petroleum hydrocarbon liquid (likely cutting oil). Analysis of the petroleum hydrocarbon chromatograms indicates that the petroleum hydrocarbon consists of diesel range hydrocarbons and Toluene. Toluene levels are relatively low, especially with respect to their biodegradability and the depth

to groundwater. The diesel range hydrocarbons are relatively immobile and also biodegradable and do not represent a risk to groundwater.

- The mass of soil PCE was, as evidenced by the time-series of soil sampling results evaluated, apparently reduced by volatilization during the tank/sump excavation, soil stockpiling, and backfilling procedures. Reduction in PCE concentrations may have occurred through dilution by mixing during the same process. If this dilution did occur, it is consistent with a previously localized mass of high-concentration soil that was mixed with adjacent cleaner soils to achieve the dilution.

- Soil PCE vapor concentrations in the Site subsurface are relatively low. The lack of correlation between the regions of high PCE vapor concentrations with the region of past high PCE soil sample concentrations indicates that the distribution of PCE vapors in the Site subsurface is not related to Site PCE soil concentrations. No clear trend or pattern in the PCE soil vapor data is evident. Offsite sources of PCE vapors in the NHOU could account for the low concentration levels detected in the Site subsurface. It is reasonable to expect that offsite PCE vapors could migrate laterally via diffusion or temperature-driven advection. A significant, laterally continuous, fine-textured, high moisture content, barrier layer to the vertical migration of PCE vapors was identified in the Site subsurface. This same layer would provide a boundary along which vapor phase PCE would preferentially migrate laterally.

- No evidence exists that indicates the presence of a significant mass of PCE in the patio area between Building Nos. 1 and 2 at Hawker Pacific, in either the soil, liquid, or vapor phase.

- There are no Site measurements, observations or analyses that indicates that there is any quantifiable and significant potential for impact to underlying groundwater, approximately 237 feet bgs.

- Geraghty & Miller recommends that a course of no further action be pursued in the patio area between Building Nos. 1 and 2.

9.0 REFERENCES

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California Regional Water Quality Control Board, Central Valley Region, 1992. Dry Cleaners -- A Major Source of PCE in Ground Water. Well Investigation Program, Fresno, California.

CH2MHill, June 1995, Report for Third and Fourth Quarter 1994 Sampling, San Fernando Valley, Los Angeles County, CA, EPA contract #68-W9-0031.

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Law Environmental, Inc., 1991. Underground Storage tank and Sump Removal, 14310 Sherman Way, Sun Valley, California. Letter report to Mr. Hank Mercier, Hawker Pacific, dated October 24, 1991.

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Lockheed Environmental Systems & Technologies Company, Third Quarter 1993 Groundwater Monitoring Report, Lockheed Environmental Systems & Technologies Company, Burbank, CA, Volume 1, November 12, 1993.

Plumb, Ross, 1993. "The Extent of VOC Contamination in Disposal Site Groundwater", presented at the 45th National Groundwater Association Conference, October 18-20, 1993, Kansas City, MO.

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Table 1
Fire, SCAQMD, and Business Permits for the Western Portion of the Hawker Pacific Property

Operating Businesses:

1987 to date

Hawker Pacific

Fire Permits:

- Underground Storage Tank
  canceled 8/19/91
- Hazardous Material #828
  effective 1/15/85
- Hazardous Material #823
  effective 5/6/93

Other Permits:

- Commercial Rental
  start 1/1/89

SCAQMD Permits:

- Chrome Plating Tank, 3/23/87
- Chrome Strip Tank, 6/10/92, 1/15/93
- Degreaser, 3/23/87, 2/24/88
- Mist Control, 3/23/87, 2/4/93
- Bag house, 9/10/87, 6/18/87, 3/28/88, 8/2/88, 5/24/94, 9/10/94
- Abrasive Blasting, 6/18/87, 9/10/87, 3/28/88, 8/2/88, 5/24/94
- Spray Booth, 3/23/87, 5/14/87, 12/21/92, 4/13/94, 4/4/94, 6/6/94
- Nickel Plating Tank, 7/19/93, 7/29/93
- Foam-in-Place Packaging, 6/10/92, 6/30/93
- Drying Oven, 5/14/87
- Scrubber, 3/23/87
- Electrolytic Process, 3/23/87
- Coating Drying Equip., 3/23/87
- Open Process Tank, 10/4/89
- Rule 1404 Compliance Plan, 9/8/89
- Air Pollution Control Equip., 7/28/89
- Cooling Tower or Pond, 9/4/92

1982 to 1987

Flight Accessory Services (owned by Inchape)

Fire Permits:

- Hazardous Material #801, 806
  granted 10/87

Other Permits:

- Commercial Retail #166, 167, 190
  start 1/1/89

SCAQMD Permits:

- Chrome Plating Tank, 5/1/83, 7/28/83, 6/6/84, 3/6/85, 6/17/85
- Plating Tank Scrubber, 3/6/85
- SPEC Systems, 7/28/85
- Chrome Strip Tank, 7/28/83,
- Hard Chrome Plating Tank, 7/28/83
- Degreaser, 5/1/83, 7/28/83, 5/18/84
- Mist Control, 6/6/84, 6/17/85
- Spray Booth, 3/6/85, 4/29/85

Drying Oven, 3/6/85, 4/29/85
Scrubber, 3/6/85

1979 to 1982

Bertea Corporation (Merged with Parker Hannifin in 1980)

Fire Permits:

Hazardous Material #826
granted 3/31/81

SCAQMD Permits:

Chrome Plating Tank, 8/1/81
Nickel Strip Tank, 8/1/81,
Spray Booth, 8/1/81
Oven, 8/1/81
Scrubber, 8/1/81
Abrasive Blasting, 8/1/81
Reclaimable Storage Tank, 8/1/81,

1969 to 1979

Canoga Corporation (Merged with Zero Corporation in 1976)

No Permits found in File Search

1963 to 1969

Stellar Hydraulics

Table 2

Results of Laboratory Analyses of Soil Samples From ALT Report, June 1990

Sample No. and Depth (feet)	TRPH (mg/kg)	1,1,1-TCA (µg/kg)	TCE (µg/kg)	Toluene (µg/kg)	PCE (µg/kg)	Total Xylene (µg/kg)
AB-1-15	36.3	NT	NT	NT	NT	NT
AB-1-20	36.3	NT	NT	NT	NT	NT
AB-2-15	220	NT	NT	NT	NT	NT
AB-2-20	136	NT	NT	NT	NT	NT
AB-3-1	38,637	NT	NT	NT	NT	NT
AB-3-3	22,251	NT	NT	NT	NT	NT
AB-3-5	3,245	6.6	19.2	550,000	555,000	584
AB-3-10	17,104	NT	NT	NT	NT	NT
AB-3-15	354	NT	NT	NT	NT	NT

Notes:

TRPH = Total Recoverable Petroleum Hydrocarbons
1,1,1-TCA = 1,1,1-Trichloroethane
TCE = Trichloroethene
PCE = Tetrachloroethene
NT = Not Tested
mg/kg = milligrams per kilogram.
µg/kg = micrograms per kilogram.

Table 3

Results of Laboratory Analyses of Soil Samples From Law Environmental Assessment, August 1990

Sample No. and Depth (feet)	PCE (µg/kg)	Toluene (µg/kg)	TCE (µg/kg)	1,1,1-TCA (µg/kg)	1,1-DCE (µg/kg)	1,1-DCA (µg/kg)	Diesel (mg/kg)
B-1-9	ND <5	4	ND <5	ND <5	ND <5	ND <5	NT
B-1-29	ND <5	8	ND <5	ND <5	ND <5	ND <5	NT
B-1-49	ND <5	5	ND <5	ND <5	ND <5	ND <5	NT
B-1-69	ND <5	8	ND <5	ND <5	ND <5	ND <5	NT
B-1-74	ND <5	4	ND <5	ND <5	ND <5	ND <5	ND <10
B-2-5	450	70	ND <5	ND <5	ND <5	ND <5	ND <10
B-2-20	42	18	ND <5	ND <5	ND <5	ND <5	ND <10
B-2-30	7	10	ND <5	ND <5	ND <5	ND <5	ND <10
B-2-40	ND <5	ND <5	ND <5	ND <5	ND <5	ND <5	ND <5
B-3-10	21	18	ND <5	ND <5	ND <5	ND <5	ND <10
B-3-20	20	25	ND <5	ND <5	ND <5	ND <5	ND <10
B-4-5	370	40	ND <5	ND <5	ND <5	ND <5	110*
B-4-20	26	14	ND <5	ND <5	ND <5	ND <5	ND <10
B-5-5	130,000	150	260	290	42	28	7300*
B-5-25	16		ND <5	ND <5	ND <5	ND	88*
B-6-20	ND <5	ND <5	ND <5	ND <5	ND <5	ND <5	ND <10
B-7-5	ND <5	13	ND <5	ND <5	ND <5	ND <5	ND <10
B-7-20	ND <5	ND <5	ND <5	ND <5	ND <5	ND <5	ND <10

Notes:
TCE = Trichloroethene
PCE = Tetrachloroethene
1,1,1-TCA = 1,1,1-Trichloroethane
1,1-DCE = 1,1-Dichloroethene
1,1-DCA = 1,1-Dichloroethene
ND <5 = Not detected, detection limit noted
NT = Not Tested
* = Hydrocarbons in diesel range, did not match standards
µg/kg = micrograms per kilogram.

Table 4

Results of Laboratory Analyses for Soil Samples Collected During Tank Removal, August 1991

Sample	TPH (mg/kg)	PCE (µg/kg)
T-1	230	18
SP-1	250	7

Notes: TPH = Total Petroleum Hydrocarbons.
PCE = Tetrachloroethene.
µg/kg = Micrograms per kilogram.
mg/kg = milligrams per kilogram.

T - Sample taken below Underground Storage Tank

SP - Sample taken from the Excavation Stockpile

Table 5

Results of Laboratory Analyses for PCE from Soil Samples Collected during Vapor Well Installation

Well No. and Depth (Feet)	PCE (µg/kg)
VW-1-10	ND <5
VW-1-20	ND <5
VW-2-10	31
VW-2-20	ND <5
VW-3-10	ND. <5
VW-3-20	ND <5
VW-4-10	ND <5
VW-4-20	ND <5

Notes: µg/kg = micrograms per kilogram.
ND = Not detected, detection limit shown.

Table 6

HAWKER PACIFIC (RESULTS FOR FIELD GC ANALYSES)				
Well	Depth	TCE	Toluene	PCE
G-1	6.5	ND	ND	ND
	6.5 RI	ND	ND	ND
	6.5 RI2	ND	ND	ND
	11.5	ND	ND	ND
	16.5	ND	ND	ND
	21.5	ND	ND	ND
	27.5	ND	ND	ND
	27.5 RI	ND	ND	ND
	32.5	ND	ND	ND
	32.5 RI	ND	ND	ND
	42.5	ND	ND	ND
	42.5 RI	ND	ND	ND
	52.5	ND	ND	ND
	62.5	ND	ND	ND
	67.5	ND	ND	ND
	72.5	ND	ND	ND
	72.5 RI	ND	ND	ND
	72.5 RI2	ND	ND	ND
	82.5	ND	ND	ND
G-2	6.5	ND	ND	143 ppb
	6.5 RI	ND	ND	188 ppb
	11.5	ND	ND	ND
	16.5	ND	ND	ND
	17' Bag	ND	ND	ND
	21.5	ND	4.5 ppb	22.3 ppb
	26.5	ND	ND	ND
	31.5	ND	ND	ND
	33' Bag	ND	ND	ND
	36.5	ND	ND	56.4 ppb
	39' Bag	ND	ND	HIT
	39' Bag RI	ND	ND	ND
	41.5	ND	ND	ND
G-3	6.5	ND	ND	4.6 ppb
	6.5 RI	ND	ND	11 ppb
	5 - 10 Bag	ND	ND	ND
	11.5	ND	ND	ND
	16.5	ND	ND	ND
	20 Bag	ND	ND	HIT
	21.5	ND	ND	ND
	21.5 RI	ND	ND	ND
	26.5	ND	ND	ND

RI = Re-Injection

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Table 7 SUMMARY OF TESTS PERFORMED

Laboratory Sample Number	Initial Moisture Content	Dry Bulk Density	Calculated Porosity	Saturated Hydraulic Conductivity	Moisture Characteristics			Particle Size Distribution	
					Hanging Column	Pressure Plate	Thermocouple Psychrometer	Sieve	Hydrometer
G-1 5-6.5	X	X	X	X	X	X	X	X	
G-1 10-11.5	X	X	X						
G-1 15-16.5	X	X	X	X	X	X	X	X	
G-1 20-21.5	X	X	X	X	X	X	X	X	
G-1 31-32.5	X	X	X	X	X	X	X	X	
G-1 41-42.5	X	X	X	X	X	X	X	X	
G-1 51-52.5	X	X	X						
G-1 61-62.5	X	X	X						
G-1 66-67.5	X	X	X	X		X	X	X	
G-1 71-72.5	X	X	X					X	X
G-1 81-82.5	X	X	X	X	X	X	X	X	X
G-2 5-6.5	X	X	X						

Table 7 SUMMARY OF TESTS PERFORMED (CONTINUED)

Laboratory Sample Number	Initial Moisture Content	Dry Bulk Density	Calculated Porosity	Saturated Hydraulic Conductivity	Moisture Characteristics			Particle Size Distribution	
					Hanging Column	Pressure Plate	Thermocouple Psychrometer	Sieve	Hydrometer
G-2 10-11.5	X	X	X						
G-2 15-16.5	X	X	X					X	X
G-2 20-21.5	X	X	X	X	X	X	X	X	
G-2 25-26.5	X	X	X	X	X	X	X	X	X
G-2 30-31.5	X	X	X						
G-2 35-36.5	X	X	X	X				X	
G-2 40-41.5	X	X	X	X	X	X	X	X	X
G-3 5-6.5	X	X	X						
G-3 10-11.5	X	X	X	X	X	X	X	X	
G-3 15-16.5	X	X	X						
G-3 20-21.5	X	X	X					X	X

Table 8 SUMMARY OF INITIAL MOISTURE CONTENT, DRY BULK DENSITY, AND CALCULATED POROSITY

Sample Number	Initial Moisture Content		Dry Bulk Density	Calculated Porosity
	Gravimetric (%, g/g)	Volumetric (%, cm^3/cm^3)	(g/cm^3)	(%)
G-1 5-6.5	5.2	9.1	1.74	34.4
Subsample*	6.2	10.9	1.76	33.6
G-1 10-11.5	NR	NR	NR	NR
Subsample*	5.1	8.4	1.64	38.0
G-1 15-16.5	3.1	5.4	1.78	32.9
Subsample*	6.0	10.5	1.75	34.1
G-1 20-21.5	5.0	7.7	1.56	41.1
Subsample*	4.4	7.1	1.61	39.1
G-1 31-32.5	4.1	7.4	1.79	32.3
Subsample*	3.2	5.4	1.65	37.7
G-1 41-42.5	4.9	8.8	1.80	32.2
Subsample*	4.2	7.5	1.80	32.2
G-1 51-52.5	NR	NR	NR	NR
Subsample	3.9	6.8	1.72	35.1
G-1 61-62.5	NR	NR	NR	NR
Subsample*	3.0	5.3	1.78	32.8
G-1 66-67.5	14.8	28.2	1.90	28.2
Subsample*	14.3	26.4	1.85	30.2
G-1 71-72.5	NR	NR	NR	NR
Subsample*	3.7	5.0	1.37	48.4
G-1 81-82.5	4.4	7.6	1.71	35.3
Subsample*	3.7	6.4	1.73	34.9
G-2 5-6.5	NR	NR	NR	NR
Subsample*	3.7	5.9	1.59	39.9

* Subsamples were taken to report initial moisture contents for the preliminary report of February 23, 1994.

NR = Moisture retention testing was not requested therefore, the subsample was the only sample tested for initial moisture, dry bulk density and porosity.

Table 8 SUMMARY OF INITIAL MOISTURE CONTENT, DRY BULK DENSITY, AND CALCULATED POROSITY (CONTINUED)

Sample Number	Initial Moisture Content		Dry Bulk Density	Calculated Porosity
	Gravimetric (%, g/g)	Volumetric (%, cm^3/cm^3)	(g/cm^3)	(%)
G-2 10-11.5	NR	NR	NR	NR
Subsample	4.0	5.9	1.47	44.6
G-2 15-16.5	NR	NR	NR	NR
Subsample*	4.9	6.2	1.28	51.8
G-2 20-21.5	4.0	7.0	1.77	33.2
Subsample	6.2	10.0	1.62	38.9
G-2 25-26.5	4.7	8.0	1.70	35.8
Subsample*	3.9	7.6	1.94	26.7
G-2 30-31.5	NR	NR	NR	NR
Subsample*	2.9	4.8	1.65	44.6
G-2 35-36.5	4.8	8.4	1.76	33.7
Subsample*	2.9	4.9	1.69	36.1
G-2 40-41.5	14.5	24.6	1.69	36.1
Subsample*	4.4	7.4	1.69	36.1
G-3 5-6.5	NR	NR	NR	NR
Subsample*	6.0	9.2	1.52	41.8
G-3 10-11.5	7.5	12.4	1.65	37.9
Subsample*	5.1	8.2	1.26	38.9
G-3 15-16.5	NR	NR	NR	NR
Subsample*	5.2	7.2	1.39	47.7
G-3 20-21.5	NR	NR	NR	NR
Subsample*	3.2	4.6	1.44	45.5

* Subsamples were taken to report initial moisture contents for the preliminary report of February 23, 1994.

NR = Moisture retention testing was not requested; therefore, the subsample was the only sample tested for initial moisture, dry bulk density and porosity.

Table 9 SUMMARY OF SATURATED HYDRAULIC CONDUCTIVITY TESTS

Sample Number	K_{sat} (cm/sec)	Method of Analysis	
		Constant Head	Falling Head
G-1 5-6.5	1.6×10^{-2}	X	
G-1 15-16.5	3.1×10^{-2}	X	
G-1 20-21.5	4.6×10^{-2}	X	
G-1 31-32.5	1.2×10^{-2}	X	
G-1 41-42.5	1.6×10^{-4}	X	
G-1 66-67.5	1.2×10^{-6}		X
G-1 81-82.5	2.3×10^{-4}	X	
G-2 20-21.5	2.9×10^{-3}	X	
G-2 25-26.5	4.5×10^{-4}		X
G-2 35-36.5	1.8×10^{-3}	X	
G-2 40-41.5	1.4×10^{-3}	X	
G-3 10-11.5	1.5×10^{-2}	X	

Table 10 SUMMARY OF MOISTURE CHARACTERISTICS OF THE INITIAL DRAINAGE CURVE

Sample Number	Pressure Head (-cm water)	Moisture Content (%, cm^3/cm^3)
G-1 5-6.5	0	28.8
	30	20.2
	306	5.1
	1020	4.1
	18183*	1.7
G-1 15-16.5	0	31.3
	15	23.4
	306	5.1
	1020	3.9
	34581*	1.3
G-1 20-21.5	0	36.9
	15	29.1
	306	5.9
	1020	5.0
	13533*	1.3
G-1 31-32.5	0	27.3
	25	22.2
	306	5.5
	1020	3.5
	20600*	2.1
G-1 41-42.5	0	30.6
	23	28.1
	306	13.1
	1020	9.1
	15328*	3.2
G-1 66-67.5	0	29.7
	56	27.8
	204	26.7
	1530	19.2
	18683*	5.3

* Thermocouple Psychrometer Data

Table 10 SUMMARY OF MOISTURE CHARACTERISTICS OF THE INITIAL DRAINAGE CURVE (CONTINUED)

Sample Number	Pressure Head (-cm water)	Moisture Content (%, cm^3/cm^3)
G-1 81-82.5	0	34.4
	24	31.6
	306	19.7
	1020	13.1
	28442*	3.7
G-2 20-21.5	0	30.9
	23	26.1
	306	8.4
	1020	5.4
	15848*	2.3
G-2 25-26.5	0	25.0
	30	21.5
	306	7.0
	1020	5.6
	20967*	2.0
G-2 35-36.5	0	30.9
	22	25.6
	306	9.2
	1020	6.8
	17163*	2.0
G-2 40-41.5	0	31.1
	36	19.8
	306	7.9
	1020	5.8
	27106*	1.9
G-3 10-11.5	0	37.7
	17	27.7
	306	5.9
	1020	4.6
	17214*	2.1

* Thermocouple Psychrometer Data

Table 11 SUMMARY OF PARTICLE SIZE CHARACTERISTICS

Sample Number	d_{10} (mm)	d_{50} (mm)	d_{60} (mm)	C_u	C_c	Dry Sieve	Hydrocarbon
G-1 5-6.5	0.20	1.2	1.6	8.0	1.1	X	
G-1 15-16.5	0.078	0.45	0.65	8.3	1.0	X	
G-1 20-21.5	0.12	0.55	0.70	5.8	1.1	X	
G-1 31-32.5	0.13	0.65	0.84	6.5	1.1	X	
G-1 41-42.5	0.038	0.36	0.51	13	1.7	X	X
G-1 66-67.5	0.017	0.20	0.28	16	2.0	X	X
G-1 71-72.5	0.017	0.23	0.35	21	1.7	X	X
G-1 81-82.5	0.027	0.41	0.68	25	1.6	X	X
G-2 15-16.5	0.11	0.53	0.71	6.5	1.1	X	
G-2 20-21.5	0.096	0.52	0.70	7.3	1.1	X	
G-2 25-26.5	0.072	0.89	1.7	24	0.74	X	X
G-2 35-36.5	0.11	0.62	0.78	7.1	1.2	X	
G-2 40-41.5	0.046	0.36	0.50	11	1.6	X	X
G-3 10-11.5	0.25	0.85	1.4	5.6	0.80	X	

d_{50} = median particle diameter

$$C_u = \frac{d_{60}}{d_{10}}$$

$$C_c = \frac{(d_{30})^2}{(d_{10})(d_{60})}$$

Table 11 SUMMARY OF PARTICLE SIZE CHARACTERISTICS (CONTINUED)

Sample Number	d_{10} (mm)	d_{50} (mm)	d_{60} (mm)	C_u	C_c	Dry Sieve	Hydrocarbon
G-3 20-21.5	0.098	0.97	1.8	18	0.62	X	

d_{50} = median particle diameter

$$C_u = \frac{d_{60}}{d_{10}}$$

$$C_c = \frac{(d_{30})^2}{(d_{10})(d_{60})}$$

Table 12

	Hawker Pacific Neutron Data								
Instrument#	H38128623	H38128623	H38128623	H38128623	H38128623	H38128623	H38128623	H38128623	H38128623
Case Std1	8697	8730	8730	8730	8705	8705	8705	8766	8766
Case Std2	8706	8684	8684	8684	8744	8744	8744	8729	8729
Drom Std 1	1488	1534	1534	1534	1508	1508	1508	1416	1416
Drom Std 2					1522	1522	1522	1492	1492
Boring	G-1	G-1	G-1	G-1	G-1	G-1	G-1	G-1	G-1
Count time	16 sec	16 sec	4 sec	4 sec	16 sec	4 sec	16 sec	16 sec	4 sec
	14-Jan	3-Feb	3-Feb	3-Feb	15-Mar	15-Mar	15-Mar	29-Mar	29-Mar
0 FEET	268	132	128	156	765	508			
1	3716	4728	4292	4504	9350	4636	8536	3445	3268
2	3024	3338	3488	3224	4486	3236	3088	3394	3496
3	2792	3348	3224	3208	4048	3096	3264	3879	3924
4	3228	3638	3568	3524	5002	3608	3704	3775	3980
5	3304	3635	3532	3616	5991	3532	3480	3894	3948
6	3356	3597	3700	3476	7418	3804	3796	3382	3948
7	3128	3569	3568	3596	6978	3704	3124	3331	3328
8	3084	3245	3300	3156	6160	3328	3232	3576	3464
9	3196	3116	3196	3244	6534	3236	3192	3529	3716
10	3012	3389	3340	3100	3963	3516	3472	3452	2508
11	2956	2975	2780	2956	3162	3028	3740	3337	3592
12	2580	2892	2832	2692	3729	2756	3244	4576	3456
13	3548	3050	2924	3152	7382	5072	4448	3932	4624
14	3452	3653	3912	3800	3767	3904	3668	3300	3992
15	2672	2893	2908	3080	2848	2864	2700	3614	3004
16	2964	2569	2592	2564	3035	3072	3064	3171	3648
17	2592	2767	2704	2840	2703	2720	2704	3321	3148
18	2956	2835	2924	2908	3284	3208	3388	2977	2928
19	2556	2905	2756	2824	2928	3088	3320	3003	2960
20	2936	2872	2984	2996	6214	2996	3120	3249	3200
21	3036	3061	2984	3036	3697	3036	3168	2870	2736
22	2556	2739	2804	2848	5492	3044	3088	3048	2932
23	2692	2660	2664	2436	5022	2784	3008	2890	2912
24	2760	2860	2864	2648	4247	2844	2940	2753	2756
25	2700	2799	2824	2724	2960	2808	2820	2495	2396
26	2468	2474	2460	2256	2469	2500	2840	2653	2600
27	2816	2526	2444	2472	2670	2220	3048	2508	2372
28	2472	2336	2376	2556	2666	2508	2368	2303	2332
29	2216	2367	2484	2612	3414	2096	2188	2192	2144
30	2136	2102	2112	2232	3140	2648	2344	2647	2704
31	2396	2534	2404	2540	2614	2748	2816	2817	2700
32	2696	2747	2780	2800	2699	2956	2744	2799	2868
33	2948	2843	3032	2848	5522	2900	2804	2966	2924
34	3076	2866	2860	2832	2942	3040	3032	3202	3056
35	2844	2961	2964	2852	3126	3172	2956	3179	3068
36	3184	3163	3368	3332	3266	3672	3112	3828	3492
37	3532	3327	3432	3484	5552	3136	3300	2950	2784
38	3264	3238	3064	3224	4405	3088	3256	3063	2900
39	2992	2820	2992	2892	2908	2676	3620	2542	2536
40	2656	2688	2752	2788	2667	2688	2640	3826	3828
41	2844	2467	2420	2432	2904	4168	4496	3958	3932
42	4172	4241	4276	4176	4109	3348	3776	3258	3224
43	3468	3579	3460	3520	6700	2692	3472	2576	2704
44	2720	2878	2880	2836	4353	2940	2628	2924	2992
45	2796	2625	2520	2664	4928	2748	2900	2940	3100
46	2728	2844	2748	2844	5230	2588	2984	2902	2980
47	2736	2816	2744	2556	5452	2868	2864	2860	3052
48	3092	2829	2860	3092	4772	2628	2840	2514	2436
49	2544	2840	2768	2620	2586	2444	2300	2561	2336
50	2632	2571	2764	2640	2524	2848	2448	2920	3004
51	2952	2551	2528	2736	2979	2776	2868	2879	2904
52	2804	2867	2868	2784	2918	2812	2940	3082	2996
53	3016	2894	2916	2996	2961	3140	2960	2996	3192

Table 12 cont.

54	2980	3101	3224	3076	3010	3260	3212	3498	3388
55	3240	3019	3372	3164	3404	2304	3424	2334	2444
56	2424	2731	2736	2576	2323	2476	2132	2513	2456
57	2412	2356	2388	2364	2861	3640	2488	2856	2608
58	2784	2506	2504	2456	5210	2892	2976	2865	2540
59	2944	2862	2980	2964	4720	2296	2768	2262	2200
60	2216	2622	2492	2460	2263	4192	2312	3128	3100
61	2220	2128		2132	2423	6740	3776	4116	3996
62	5036	4359	4864	4764	4864	5736	4220	4654	4676
63	4916	4226	4636	4520	7768	3712	4400	3201	2904
64	3596	3903	3988	3676	3348	3044	3272	3054	3120
65	2972	3105	3344	3352	3158	2944	2764	3004	2940
66	2740	2944	2872	3024	2929	3104	2960	3170	3076
67	3128	3060	3024	3248	5304	4728	3176	3537	3512
68	3316	3302	3544	3436	3501	3620	3836	3829	3688
69	3428	3485	3468	3352	3448	3728	3936	3516	3652
70	3420	3792	3724	3936	6692	3520	3588	3784	3432
71	3740	3562	3464	3548	3610	3612	3796	3517	3328
72	3380	3596	3756	3644	3661	3908	3436	3555	3456
73	3504	3430	3676	3720	7450	3596	4544	3701	3660
74	3092	3377	3532	3252	3837	3884	3720	3846	3684
75	3636	3717	3904	3788	3860	3632	4056	3729	3612
76	3136	3648	3828	3700	3495	3752	3892	3842	3844
77	3320	3758	3816	3932	3832	7696	8080	3664	3956
78	3552	3995	3864	3848	4824	7352	7440	3792	3660
79	3692	3774	3816	3904	3952	3496	7592	3550	3680
80	3132	3717	3724	3644	3564	4160	7456	4212	4304
81	3716	3826	4188	3948	4117	7320	8176	3583	3420
82	3408	4146	6576	4100	7368	9400	6888	5168	5000
83	4016	3748	6896	3700	9356	5616	10080	5727	5756
84	5388	5335	5376	5120	5714	5680	11936	5230	5304
85	5260	5797	5696	6060	5676	5372	10264	5192	5424
86	4820	5127	5320	5236	5336	5384	10328		
87		5410	5232	5144	5269				

Table 12 cont.

	Hawker Pacific Neutron Data								
Instrument#	H38128623	H38128623	H38128623	H38128623	H38128623	H38128623	H38128623		
Case Std1	8730	8730	8730	8730	8730	8766	8766		
Case Std2	8684	8684	8684	8684	8684	8729	8729		
Drom Std 1	1534	1534	1534	1534	1534	1416	1416		
Drom Std 2				1522	1522	1492	1492		
Boring	G-2	G-2	G-2	G-2	G-2	G-2	G-2		
Count time	16 sec	4 sec	4 sec	16 sec	4 sec	4 sec	16 sec		
	3-Feb	3-Feb	3-Feb	15-Mar	15-Mar	29-Mar	29-Mar		
0 FEET	385	300	400	371	664				
1	4041	3920	3824	4066	4084	4248	3408		
2	3206	2964	3100	3262	3308	3724	3682		
3	2839	2824	3048	2954	2940	3076	3384		
4	3089	3052	2920	3026	3080	3332	3397		
5	3000	3012	3080	3417	3468	3348	3478		
6	2744	2820	2768	3046	3172	3072	3117		
7	3064	3036	3268	3504	3368	3588	3528		
8	2840	2832	2704	2906	2832	2840	2982		
9	2613	2712	2620	2913	3080	2492	2782		
10	3802	4196	4088	4237	4256	3628	3659		
11	2914	2944	2800	2833	2964	3496	3392		
12	2895	2920	2664	2983	2960	2692	2931		
13	2657	2432	2404	2774	2756	2744	2768		
14	3013	2936	2936	3300	2856	3032	3289		
15	2857	2856	2760	3026	3104	2988	3009		
16	2632	2740	2560	2902	2995	2868	2849		
17	2840	2852	2820	2942	2936	2964	2992		
18	2928	2772	2844	3078	3012	3164	3058		
19	2863	2616	2936	2992	3068	2888	2906		
20	2907	2996	2868	3041	3128	3192	3135		
21	3004	2856	3064	3067	3184	2976	3016		
22	3228	3240	2988	3241	3376	3440	3373		
23	3063	3124	2928	3126	3100	3156	3234		
24	3010	2840	3124	3045	3188	2836	2764		
25	3163	3084	3112	3127	3044	3100	3071		
26	3056	3068	3028	3130	3256	3080	3147		
27	3173	2812	3240	3101	2984	3140	3212		
28	3394	3412	3452	3225	3400	3188	3347		
29	2985	2892	2908	3078	2988	3188	2822		
30	2926	2928	2984	2889	3124	3132	3008		
31	2727	2768	2944	2808	2608	2688	2767		
32	3106	3072	3168	3000	2904	2960	2972		
33	2930	2740	2968	3225	3012	2952	2815		
34		3352	3124	2868	3164	3376	3267		
35	3099	3096	3012	2936	2968	2960	2799		
36	2844	2932	3112	3587	2928	2996	2982		
37	3049	3780	3780	3422	4072	3124	3256		
38	3691	3580	3988	3470	3712	3664	3518		
39	3217	3480	3416	4689	3432	3180	3164		
40	3948	4516	4560	6039	4568	3736	3849		
41	6044	5896	6064						

Table 12 cont.

	Hawker Pacific Neutron Data								
Instrument#	H38128623	H38128623	H38128623	H38128623	H38128623	H38128623			
Case Std1	8730	8730	8730	8730	8766	8766			
Case Std2	8684	8684	8684	8684	8729	8729			
Drom Std 1	1534	1534	1534	1534	1416	1416			
Drom Std 2			1522	1522	1492	1492			
Boring	G-3	G-3	G-3	G-3	G-3	G-3			
Count time	16 sec	4 sec	16 sec	4 sec	16 sec	4 sec			
	3-Feb	3-Feb	15-Mar	15-Mar	29-Mar	29-Mar			
0 FEET	84	88							
1	1602	1260	1020	3748					
2	3817	4016	3593	3318	3310	3492			
3	2942	2976	2917	3014	3065	3224			
4	2954	2948	3488	3566	3582	3336			
5	3223	3508	3143	3245	3446	3336			
6	3359	3480	3166	3147	3420	3256			
7	3316	3296	3390	3258	3702	3684			
8	3039	3004	2928	2986	3234	3064			
9	3565	3536	3534	3397	3730	3672			
10	3578	3536	3221	3262	3748	3752			
11	3560	3448	3376	3409	3848	3744			
12	3733	3768	3609	3649	3960	3920			
13	3586	3416	3140	3166	3789	4068			
14	3074	3136	4360	4175	3384	3996			
15	4883	4900	4159	4236	4510	4624			
16	3184	2912	3227	3228	3428	3332			
17	3301	3256	3692	3674	3836	3924			
18	3112	3064	3808	3885	3860	3636			
19	3167	3092	3772	3658	3738	3968			
20	3033	3320	3813	3875	3849	3672			
21	2911	2924	3531	3539	3400	3468			
22	3100	3124	3608	3562	3584	3420			
23	2888	3048	3766	3540	3392	3440			
24	4077	4208	5760	5777	6524	6524			
25	5266	5316	5693	5609					

Table 13
Conversion of Soil Gas Concentrations to Total Soil Concentrations for Soil Gas Results Obtained at the Hawker Pacific Facility Between Buildings 1 and 2

based on the equation: $C_t = C_g*(\theta_W+(n-\theta_W)*K_H+\rho_b*f_{oc}*K_{oc})/(\rho_b*K_H)$
from Rong & Sakaida, 1996

Soil Gas Sample	Sample Date	Soil Gas Concentration C_g µg/l	Soil Water Content[1] θ_W (--)	Soil Porosity n (--)	Henry's Law Constant K_H (--)	Soil Bulk Density ρ_b (g/ml)	Soil Organic Carbon f_{oc} (--)	Organic Carbon Partition Coefficient K_{oc} (ml/g)	Total Soil Concentration C_T µg/kg
G-1@80 ft, #1	2/3/94	8.1	0.0405	0.35	0.956	1.72	0.001	660	7.2
G-1@80 ft, #2	2/4/94	5.1	0.0405	0.35	0.956	1.72	0.001	660	4.6
G-1@80 ft, #3	2/4/94	5.4	0.0405	0.35	0.956	1.72	0.001	660	4.8
G-1@80 ft, #4	3/31/94	39.2	0.0405	0.35	0.956	1.72	0.001	660	35.1
G-2@40 ft, #1	2/3/94	8.7	0.0945	0.361	0.956	1.69	0.001	660	7.9
G-2@40 ft, #2	2/3/94	9.8	0.0945	0.361	0.956	1.69	0.001	660	8.9
G-2@40 ft, #3	2/4/94	2.8	0.0945	0.361	0.956	1.69	0.001	660	2.5
G-2@40 ft, #4	3/31/94	41.0	0.0945	0.361	0.956	1.69	0.001	660	37.2
G-2@30 ft, #1	3/31/94	15.4	0.029	0.446	0.956	1.65	0.001	660	14.8
G-2@15 ft, #1	3/31/94	23.1	0.049	0.518	0.956	1.28	0.001	660	25.3
G-2@7 ft, #1	3/31/94	26.2	0.037	0.399	0.956	1.59	0.001	660	24.7
G-3@22 ft, #1	2/3/94	2.7	0.032	0.455	0.956	1.44	0.001	660	2.7
G-3@22 ft, #2	2/4/94	1.1	0.032	0.455	0.956	1.44	0.001	660	1.1
G-3@22 ft, #3	3/31/94	13.3	0.032	0.455	0.956	1.44	0.001	660	13.4
G-3@11 ft, #1	3/31/94	19.5	0.063	0.384	0.956	1.46	0.001	660	18.6
G-3@7 ft, #1	3/31/94	12.6	0.06	0.418	0.956	1.52	0.001	660	12.2

[1] Water Content determined by mass

note: soil gas concentrations at 80' are assumed equal to those measured in G-1 @ 84' bgs.

Table 14
Conversion of Soil Gas Concentrations to Total Soil Concentrations for Soil Gas Results Obtained at the Hawker Pacific Facility Between Buildings 1 and 2

based on the equation: $C_t = C_g*(\theta_W+(n-\theta_W)*K_H+\rho_b*f_{oc}*K_{oc})/(\rho_b*K_H)$
from Rong & Sakaida, 1996

Soil Gas Sample	Sample Date	Soil Gas Concentration C_g µg/l	Soil Water Content[1] θ_W (--)	Soil Porosity n (--)	Henry's Law Constant K_H (--)	Soil Bulk Density ρ_b (g/mi)	Soil Organic Carbon f_{oc} (--)	Organic Carbon Partition Coefficient K_{oc} (ml/g)	Total Soil Concentration C_T µg/kg
G-1@80 ft, #1	2/3/94	8.1	0.0405	0.35	0.956	1.72	0.00247	660	15.5
G-1@80 ft, #2	2/4/94	5.1	0.0405	0.35	0.956	1.72	0.00247	660	9.7
G-1@80 ft, #3	2/4/94	5.4	0.0405	0.35	0.956	1.72	0.00247	660	10.3
G-1@80 ft, #4	3/31/94	39.2	0.0405	0.35	0.956	1.72	0.00247	660	74.9
G-2@40 ft, #1	2/3/94	8.7	0.0945	0.361	0.956	1.69	0.00247	660	16.7
G-2@40 ft, #2	2/3/94	9.8	0.0945	0.361	0.956	1.69	0.00247	660	18.8
G-2@40 ft, #3	2/4/94	2.8	0.0945	0.361	0.956	1.69	0.00247	660	5.4
G-2@40 ft, #4	3/31/94	41.0	0.0945	0.361	0.956	1.69	0.00247	660	78.8
G-2@30 ft, #1	3/31/94	15.4	0.029	0.446	0.956	1.65	0.00247	660	30.4
G-2@15 ft, #1	3/31/94	23.1	0.049	0.518	0.956	1.28	0.00247	660	48.8
G-2@7 ft, #1	3/31/94	26.2	0.037	0.399	0.956	1.59	0.00247	660	51.3
G-3@22 ft, #1	2/3/94	2.7	0.032	0.455	0.956	1.44	0.00247	660	5.5
G-3@22 ft, #2	2/4/94	1.1	0.032	0.455	0.956	1.44	0.00247	660	2.2
G-3@22 ft, #3	3/31/94	13.3	0.032	0.455	0.956	1.44	0.00247	660	26.9
G-3@11 ft, #1	3/31/94	19.5	0.063	0.384	0.956	1.46	0.00247	660	38.4
G-3@7 ft, #1	3/31/94	12.6	0.06	0.418	0.956	1.52	0.00247	660	25.0

[1] Water Content determined by mass
note: soil gas concentrations at 80' are assumed equal to those measured in G-1 @ 84' bgs.

Table 15
Calculated Soil Cleanup Levels for the Site Using CRWQCB Guidance Entitled " Interim Guidance for Remediation of VOC Impacted Sites" (January, 1995)

Depth of Interest (bgs)	0		7		15		30		40		80	
	Depth	Percent	Depth	Percent	Depth	Percent	Depth	Percent	Depth	Percent	Depth	Percent
Gravel	69.59	29%	69.6	30%	69.6	31%	69.6	34%	69.6	35%	69.6	44%
Sands	127.8	54%	120.8	52%	117.8	53%	106.8	51%	100.3	51%	71.6	45%
Silts	40.14	17%	40.1	17%	35.1	16%	31.1	15%	27.6	14%	16.3	10%
Clays	0	0%	0	0%	0	0%		0%		0%		0%
	237.5		230.5		222.5		207.5		197.5		157.5	

At 7 foot level — 230.50 feet to GW

$AF_{230.5}$= (Gravel AF*Gravel%)+(Sand AF*Sand%)+(Silt AF*Silt%)+(Clay AF*Clay%)

$AF_{230.5}$= (13*30%)+(26*52%)+(51*17%)+(255*0%)

$AF_{230.5}$= 26.4

$c_{230.5}$= $AF_{230.5}$*MCL_{PCE}

$c_{230.5}$= 26.4 *5

$c_{230.5}$= 132 ppm

At 15 foot level — 222.50 feet to GW

$AF_{222.5}$= (Gravel AF*Gravel%)+(Sand AF*Sand%)+(Silt AF*Silt%)+(Clay AF*Clay%)

$AF_{222.5}$= (13*31%)+(26*53%)+(51*16%)+(255*0%)

$AF_{222.5}$= 25.9

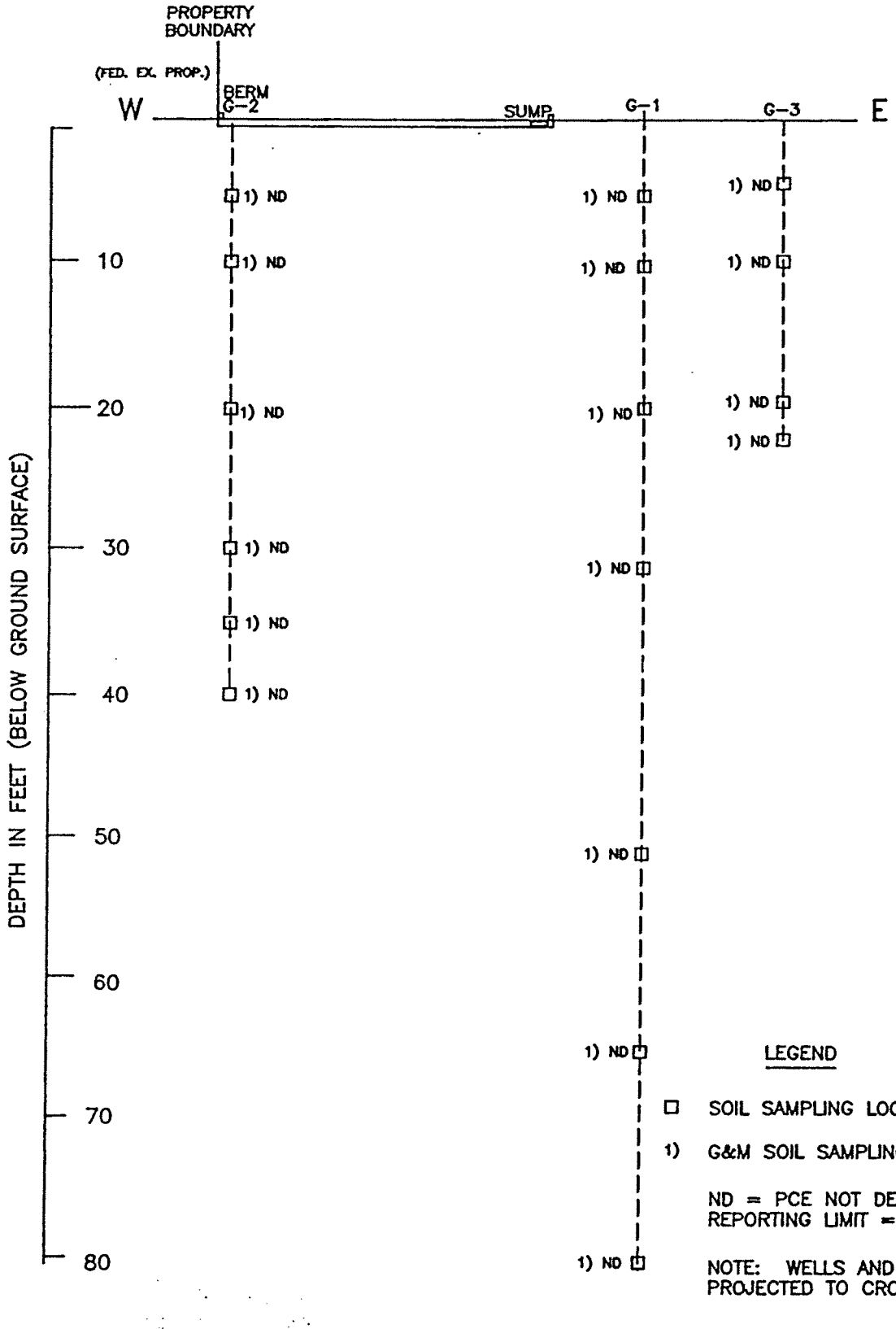
$C_{222.5}$= $AF_{222.5}$*MCL_{PCE}

$C_{222.5}$= 25.9 *5

$C_{222.5}$= 129 ppm

Table 15 (cont.)

At 30 foot level	207.50 feet to GW
	$AF_{207.5}$= (Gravel AF*Gravel%)+(Sand AF*Sand%)+(Silt AF*Silt%)+(Clay AF*Clay%)
	$AF_{207.5}$= (13*34%)+(26*51%)+(51*15%)+(255*0%)
	$AF_{207.5}$= 25.4
	$C_{207.5}$= $AF_{207.5}$*MCL_{PCE}
	$C_{207.5}$= 25.4 *5
	$C_{207.5}$= 127 ppm
At 40 foot level	197.50 feet to GW
	$AF_{197.5}$= (Gravel AF*Gravel%)+(Sand AF*Sand%)+(Silt AF*Silt%)+(Clay AF*Clay%)
	$AF_{197.5}$= (13*35%)+(26*51%)+(51*14%)+(255*0%)
	$AF_{197.5}$= 24.9
	$C_{197.5}$= $AF_{197.5}$*MCL_{PCE}
	$C_{197.5}$= 24.9 *5
	$C_{197.5}$= 125 ppm
At 80 foot level	157.50 feet to GW
	$AF_{157.5}$= (Gravel AF*Gravel%)+(Sand AF*Sand%)+(Silt AF*Silt%)+(Clay AF*Clay%)
	$AF_{157.5}$= (13*44%)+(26*45%)+(51*10%)+(255*0%)
	$AF_{157.5}$= 22.8
	$C_{157.5}$= $AF_{157.5}$*MCL_{PCE}
	$C_{157.5}$= 22.8 *5
	$C_{157.5}$= 114 ppm



DRAFTER: JDB/SKP | APPROVED: EWJ | CHECKED: EWJ | DRAWING: GMS_PCE | FILE NO.: R10983C | PRJCT NO.: CA0228.001 | DWG DATE: 21 APR 94

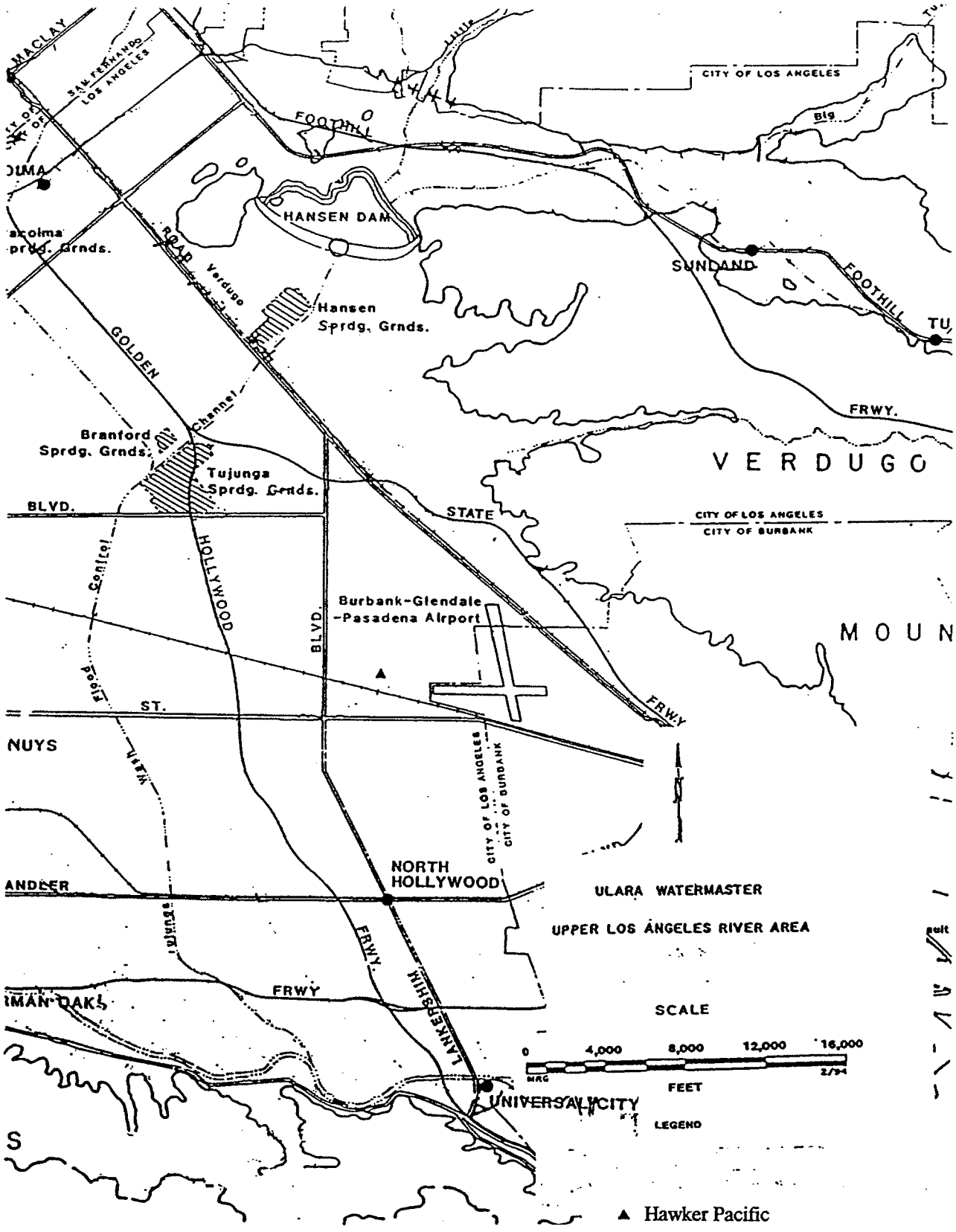
GERAGHTY & MILLER, INC.
Environmental Services

0 10 FT

G & M SOIL PCE DATA

HAWKER PACIFIC INC.
SUN VALLEY, CA

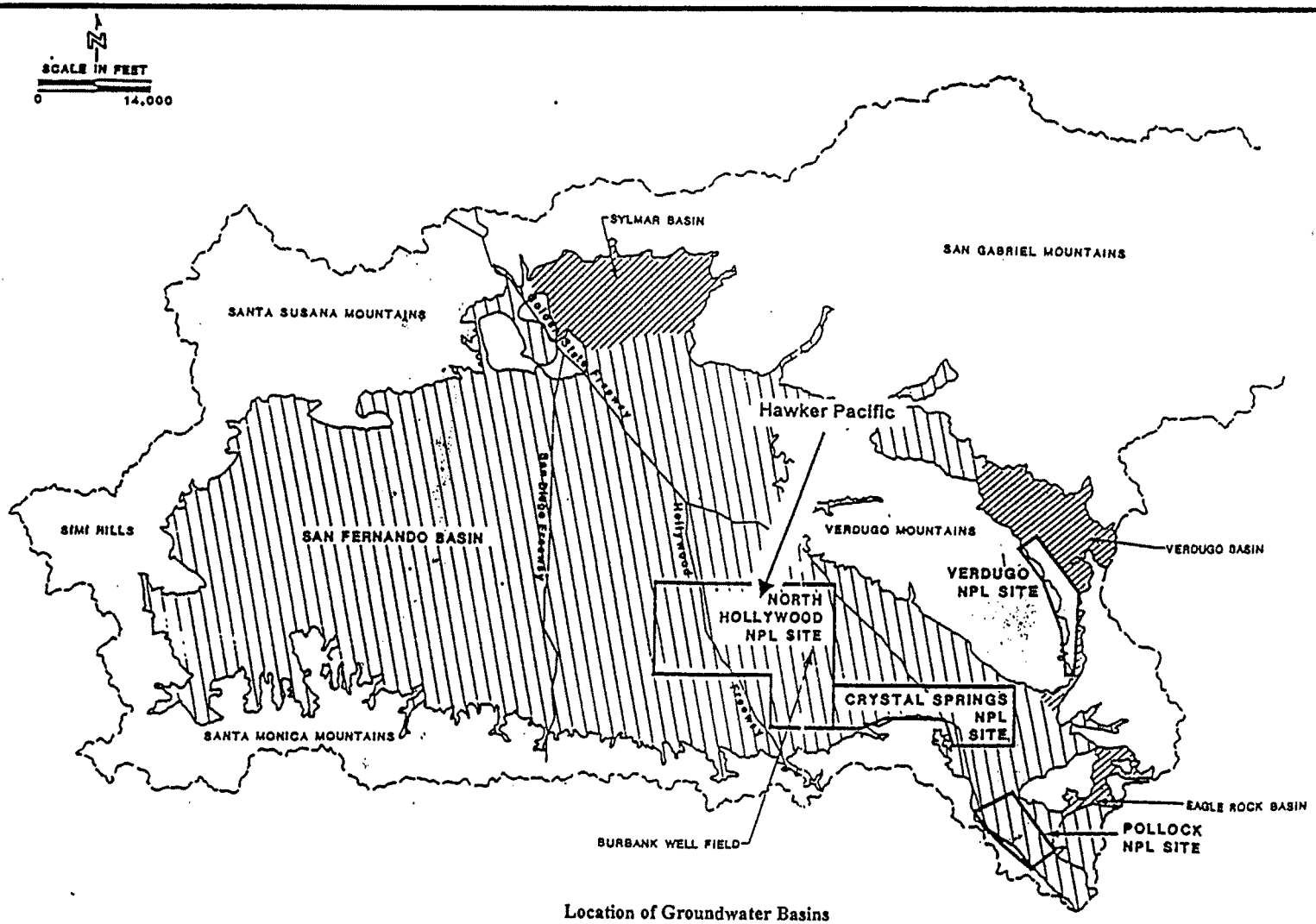
FIGURE 1



GERAGHTY & MILLER, INC.
Environmental Services
A heidemij company

SITE LOCATION MAP

FIGURE
2



Location of Groundwater Basins
and NPL Sites in Upper
Los Angeles River Area

GERAGHTY & MILLER, INC.
Environmental Services
A heidemij company

LOCATION OF NORTH HOLLYWOOD OPERABLE UNIT

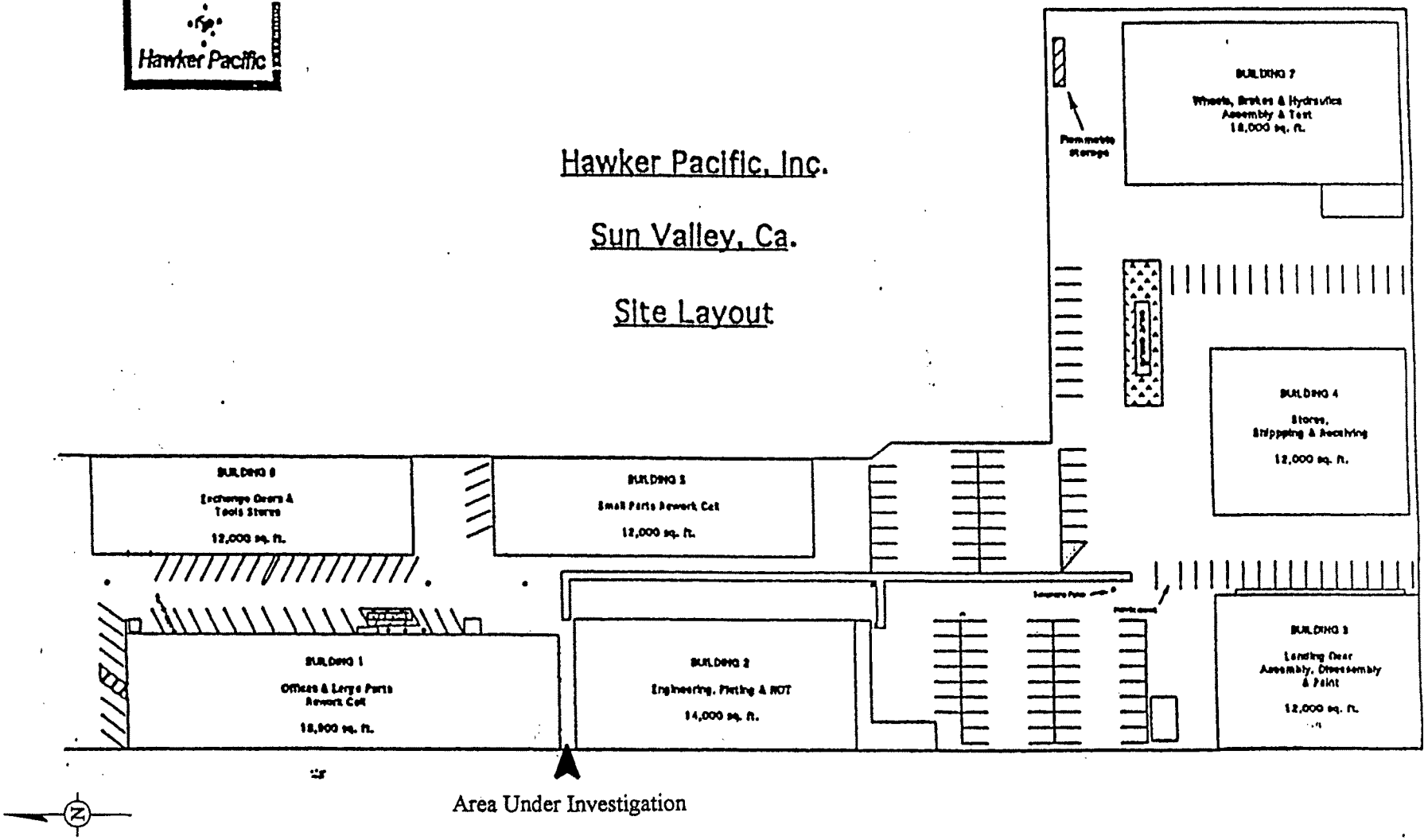
FIGURE
3

Hawker Pacific

Hawker Pacific, Inc.

Sun Valley, Ca.

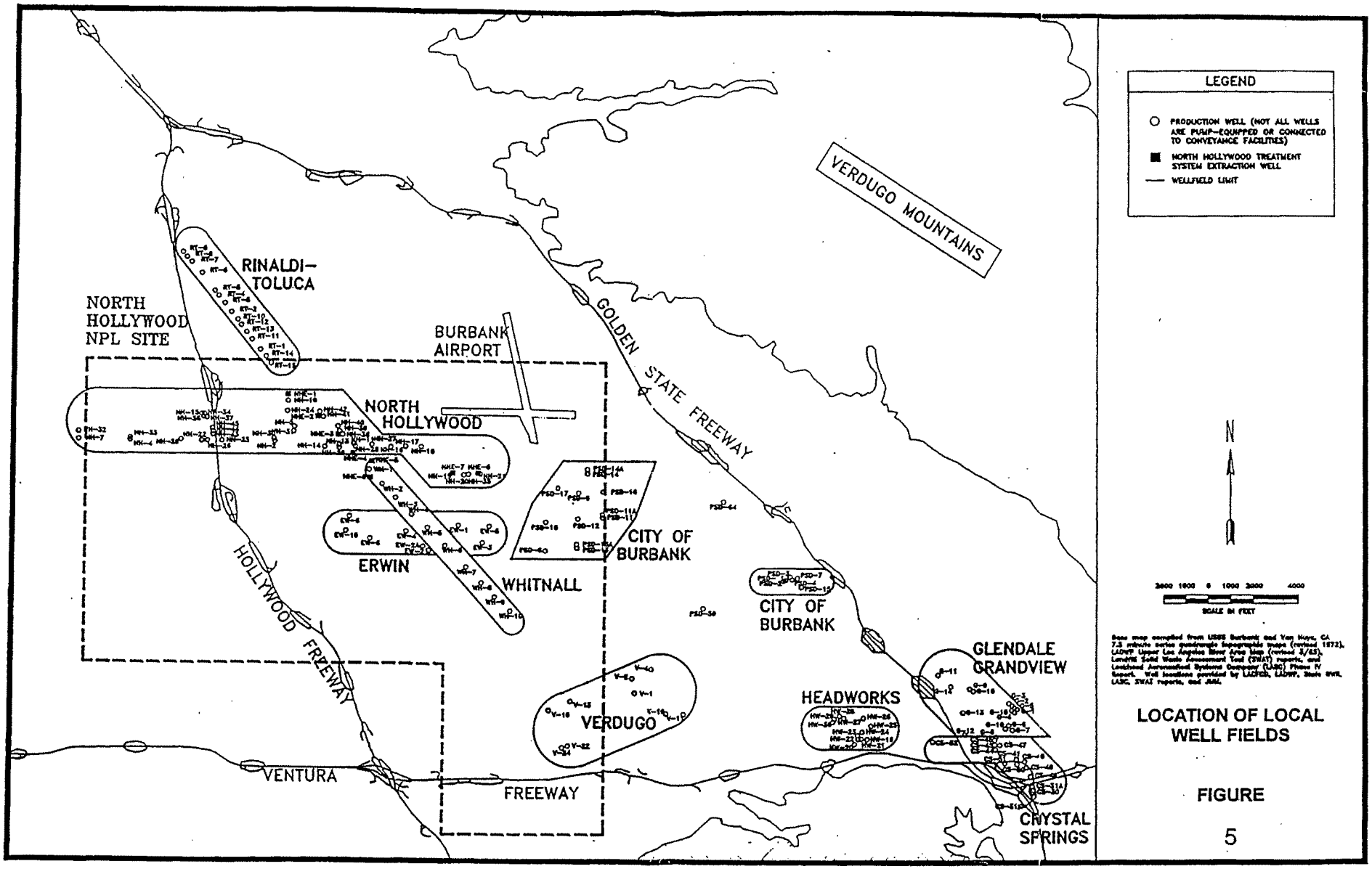
Site Layout



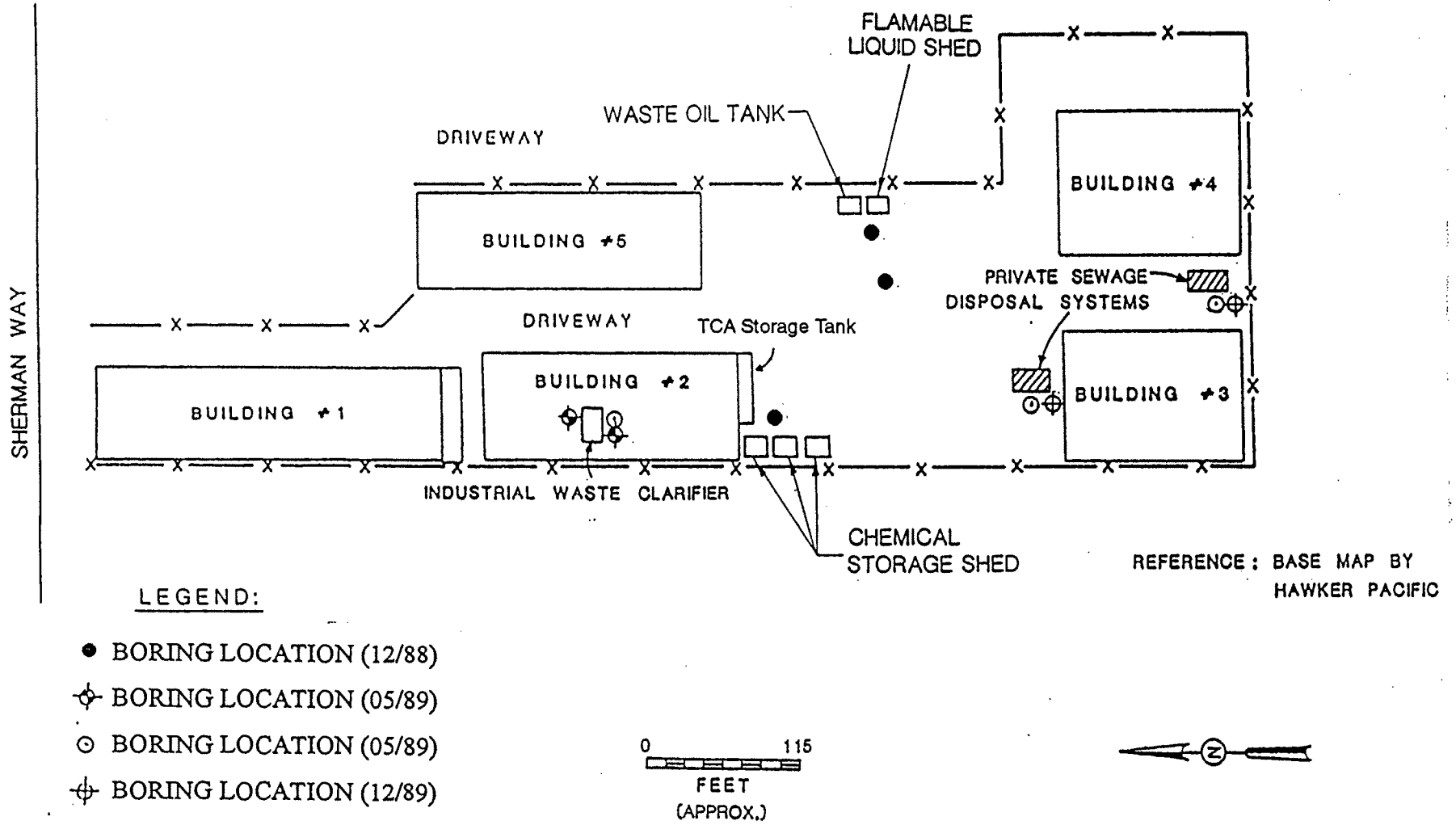
GERAGHTY & MILLER, INC.
Environmental Services
A heidemij company

Site Layout
Showing Area Under Investigation

FIGURE
4



From: Watermaster 1993



GERAGHTY & MILLER, INC.
Environmental Services
A heidemij company

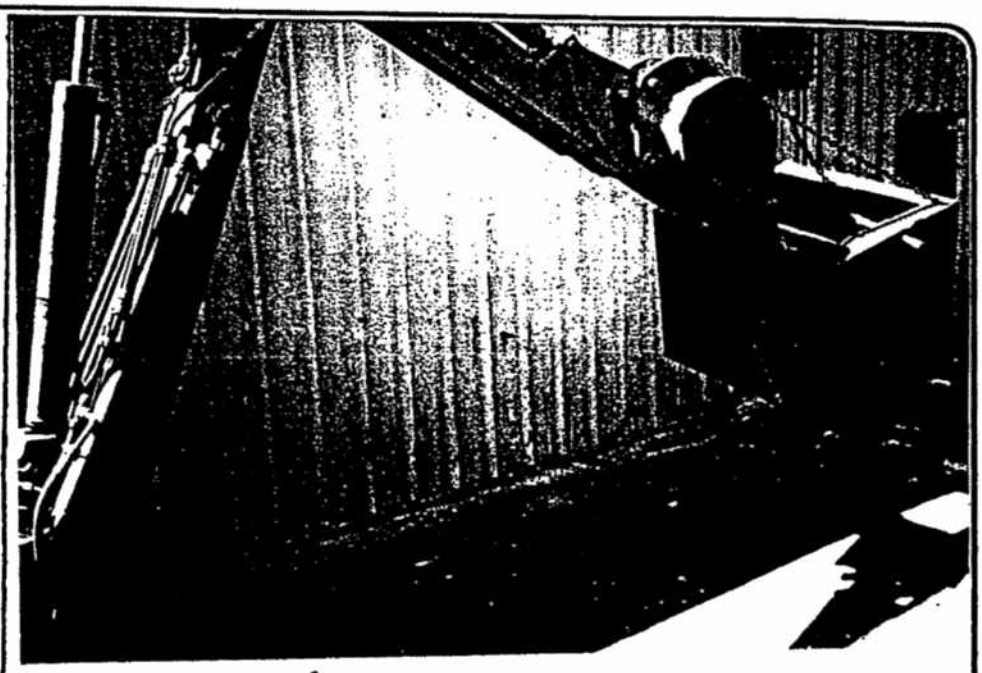
Locations of Historical Investigation Borings and Investigated Site Features

Compiled from: Law/Crandall 1993

FIGURE
6

DATE 08/19/1991
TIME ___ (A.M.) P.M.
DIRECTION: N NNE NE ENE
E ESE SE SSE
S SSW SW WSW
W WNW NW NNW
WEATHER ___

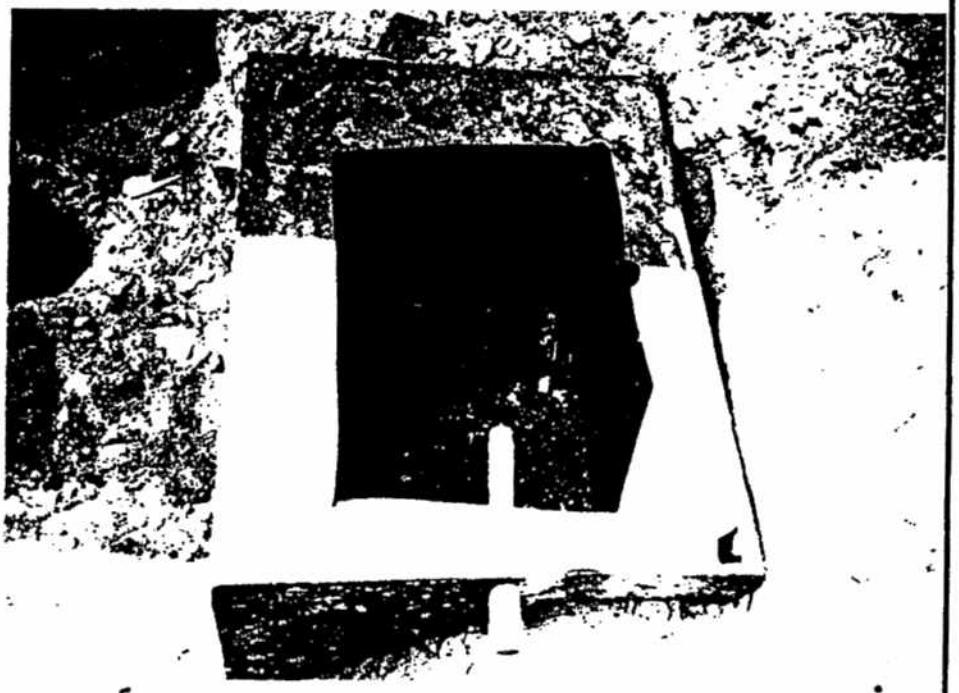
SITE Harding-Pacific
FILE NO. 111.0436
PHOTOGRAPHED BY:
M.T.
SAMPLE ID#'(If applicable)



DESCRIPTION: Sump removal

DATE 08/19/1991
TIME ___ (A.M.) P.M.
DIRECTION: N NNE NE ENE
E ESE SE SSE
S SSW SW WSW
W WNW NW NNW
WEATHER ___

SITE Harding-Pacific
FILE NO. 111.0436
PHOTOGRAPHED BY:
M.T.
SAMPLE ID#'(If applicable)



DESCRIPTION: Sump removal optional view

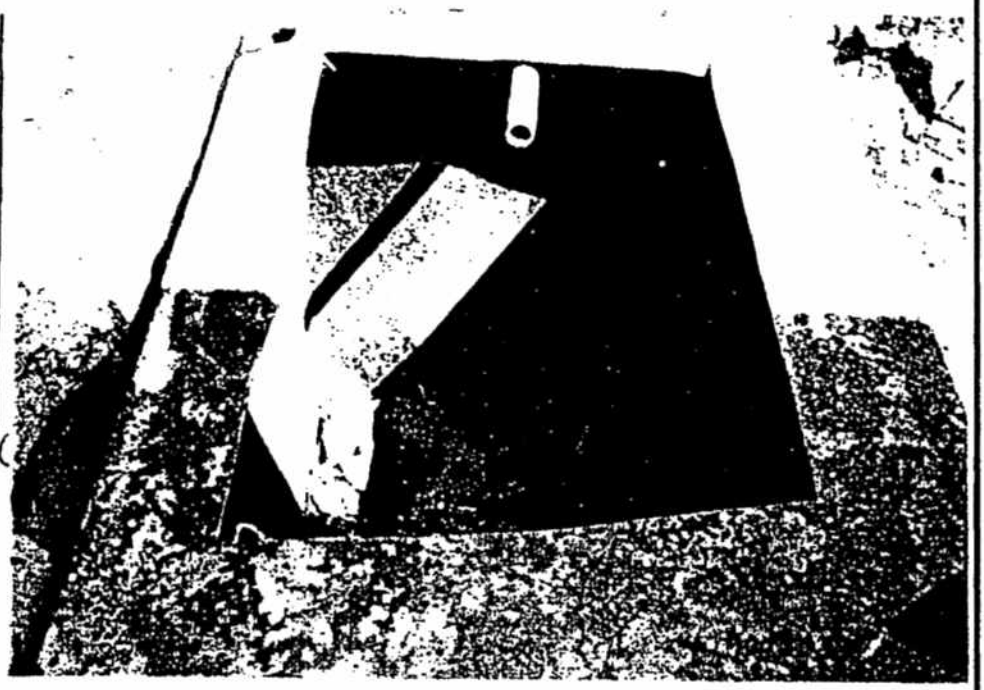
GERAGHTY & MILLER, INC.
Environmental Services
A heidemij company

Photos of Tank Removal at Site (from LARWQCB file)

FIGURE 7

DATE 08/19/1991
TIME ____ (A.M.) P.M.
DIRECTION: N NNE NE ENE
E ESE SE SSE
S SSW SW WSW
W WNW NW NNW
WEATHER ____

SITE Hamilton Pacific
FILE NO. UL.0436
PHOTOGRAPHED BY:
T. T.
SAMPLE ID#'(If applicable)



DESCRIPTION: Sump removal

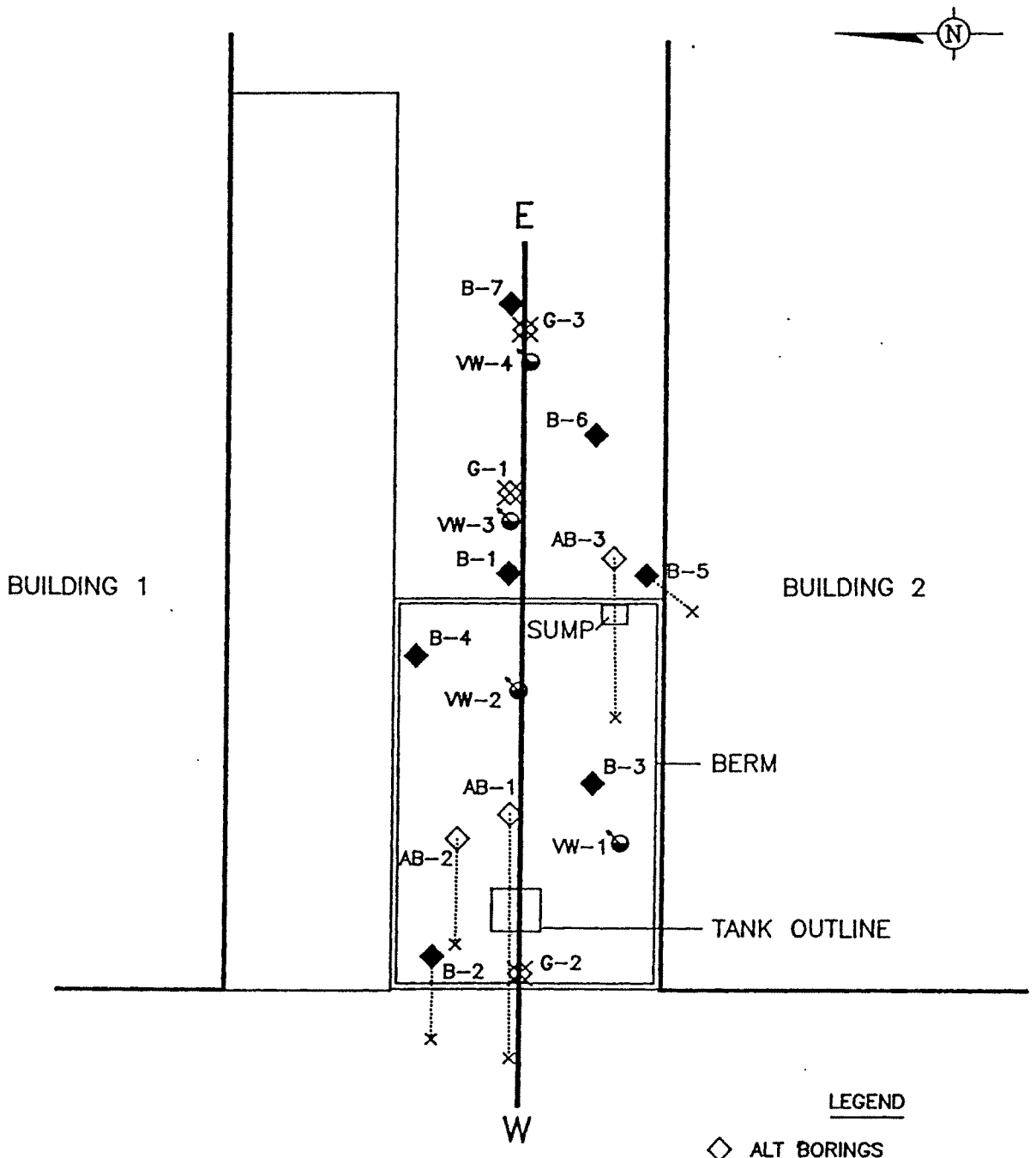
DATE 08/19/1991
TIME ____ (A.M.) P.M.
DIRECTION: N NNE NE ENE
E ESE SE SSE
S SSW SW WSW
W WNW NW NNW
WEATHER ____

SITE Hamilton Pacific
FILE NO. UL.0436
PHOTOGRAPHED BY:
T. T.
SAMPLE ID#'(If applicable)

GERAGHTY & MILLER, INC.
Environmental Services
A heidemij company

Photos of Tank Removal at Site (from LARWQCB file)

FIGURE 8



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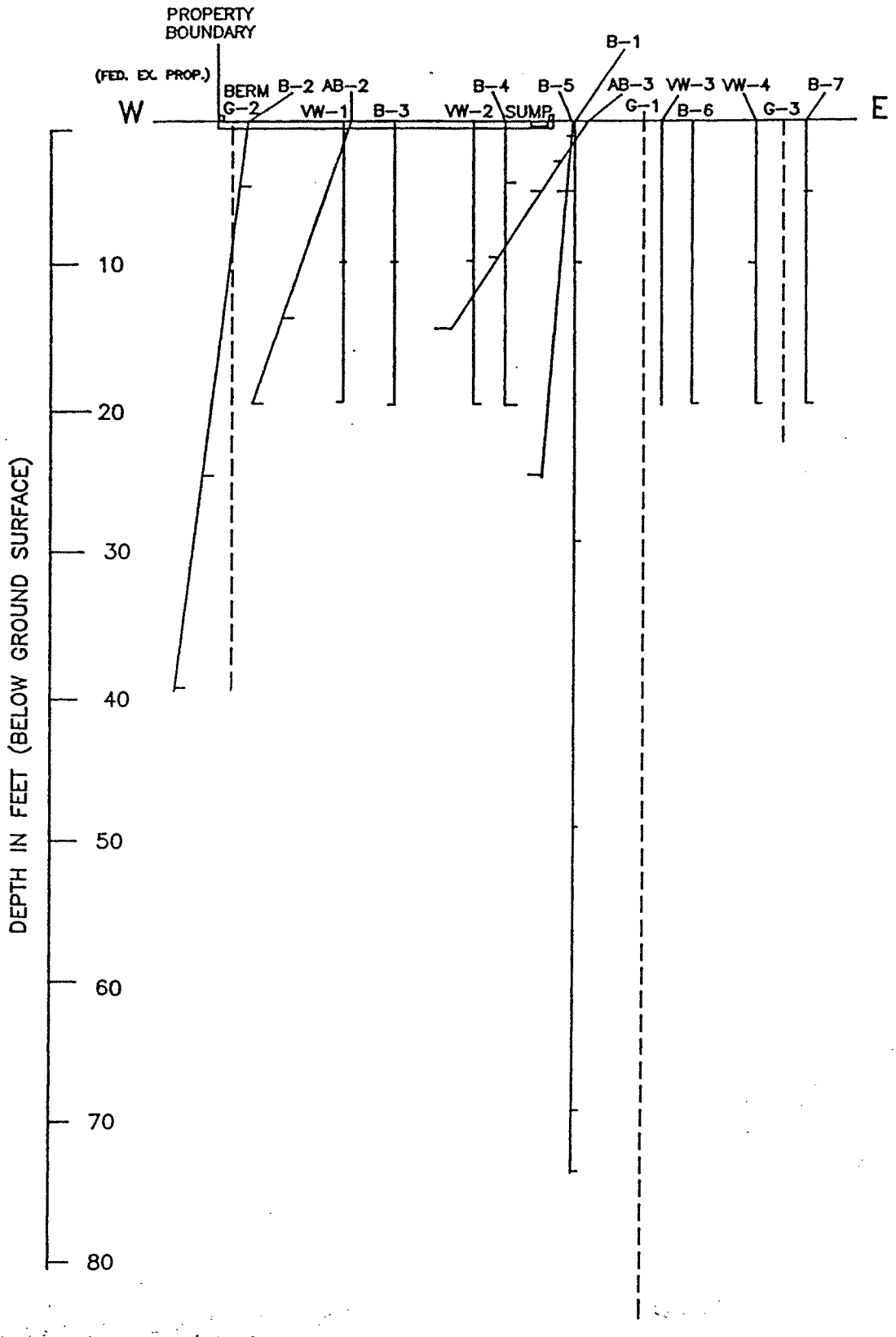
GERAGHTY & MILLER, INC.
Environmental Services

0 10 FT

SAMPLING LOCATIONS

HAWKER PACIFIC INC.
SUN VALLEY, CA

FIGURE
9



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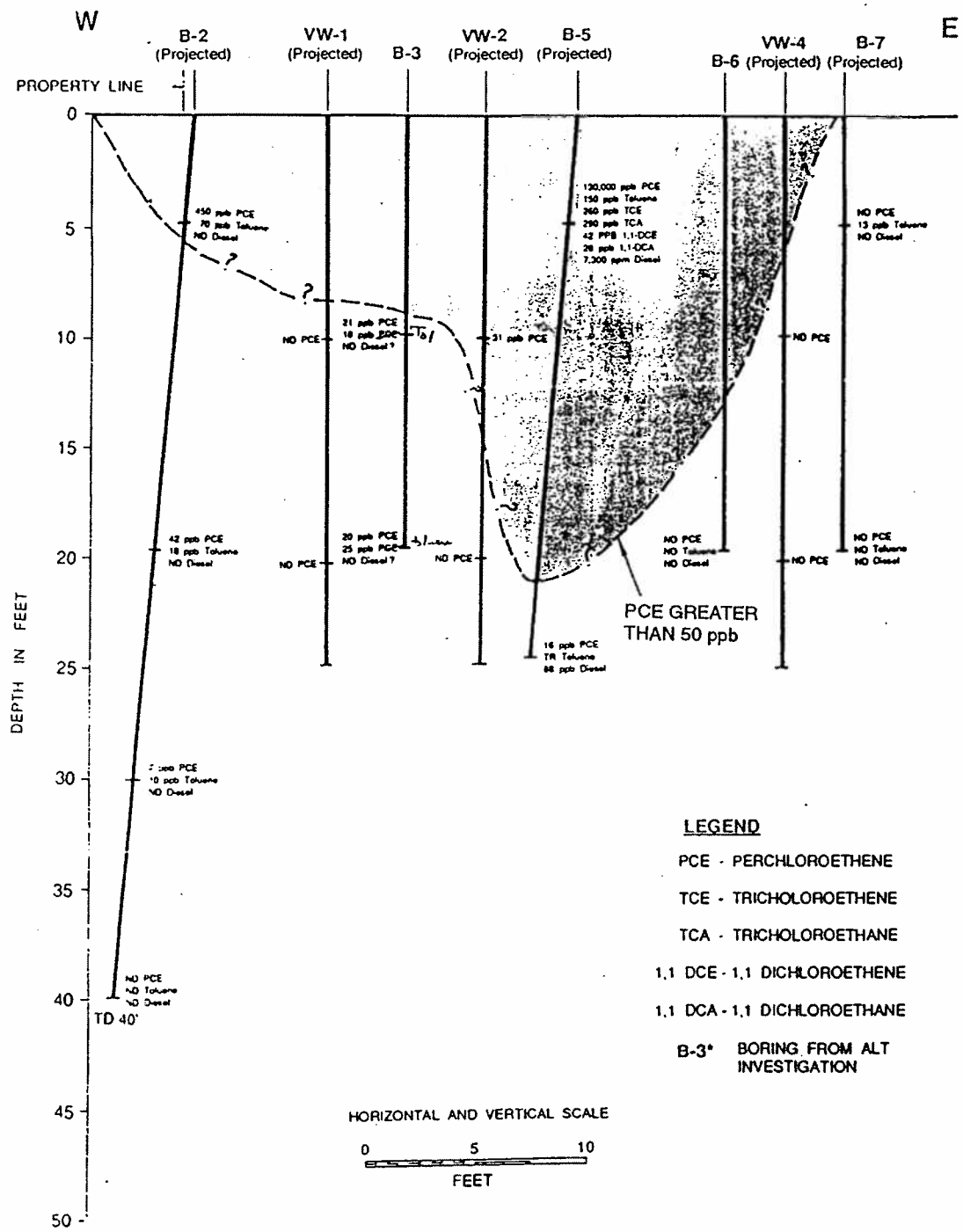
GERAGHTY & MILLER, INC.
Environmental Services

0 10 FT

SOIL BORING LOCATIONS, CROSS SECTIONAL VIEW

HAWKER PACIFIC INC.
SUN VALLEY, CA

FIGURE
10

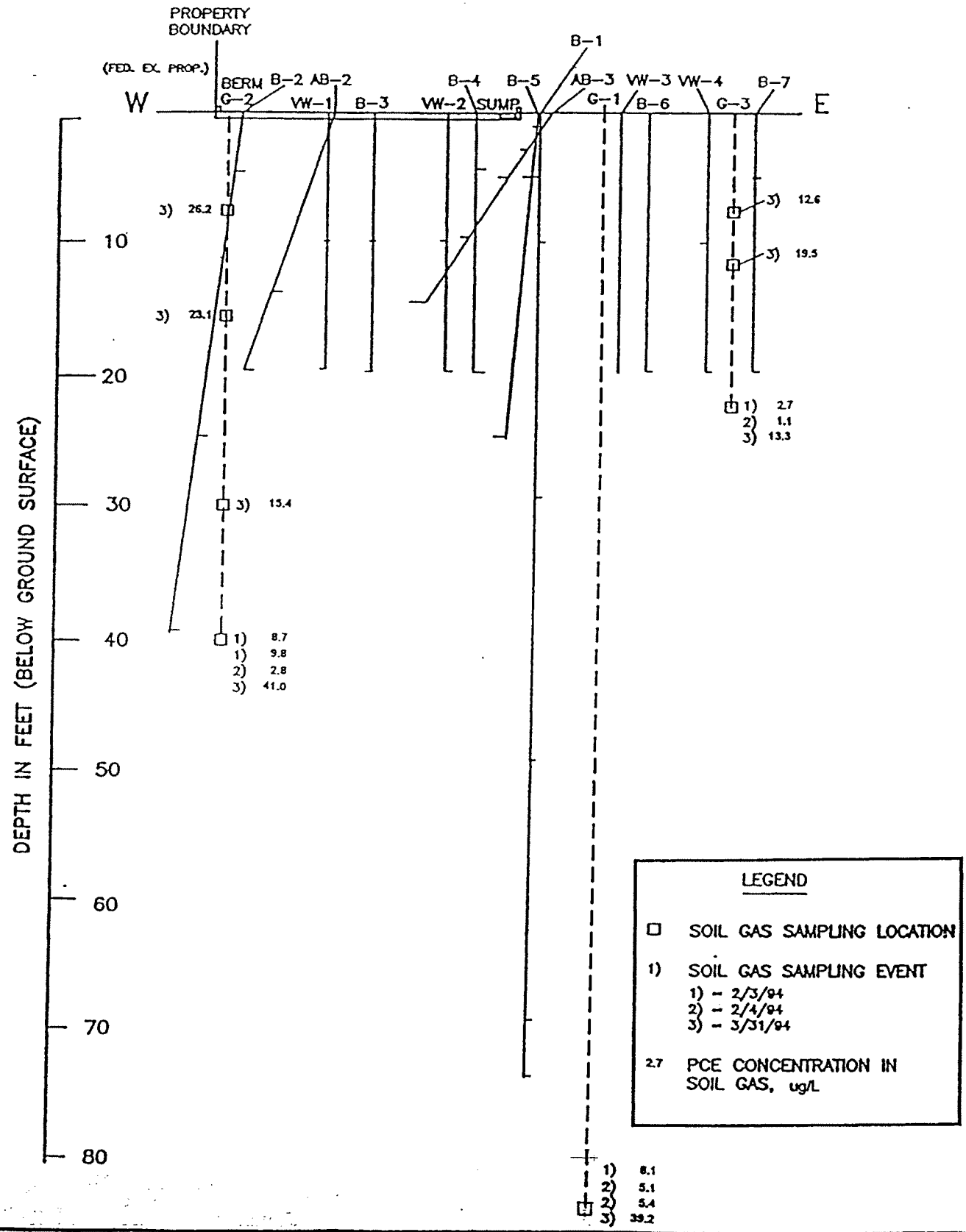


GERAGHTY & MILLER, INC.
Environmental Services
A heidemij company

E-W Cross Section
Showing Estimated PCE Plume
Greater than 50 ppb

from Law/Crandall

FIGURE
11



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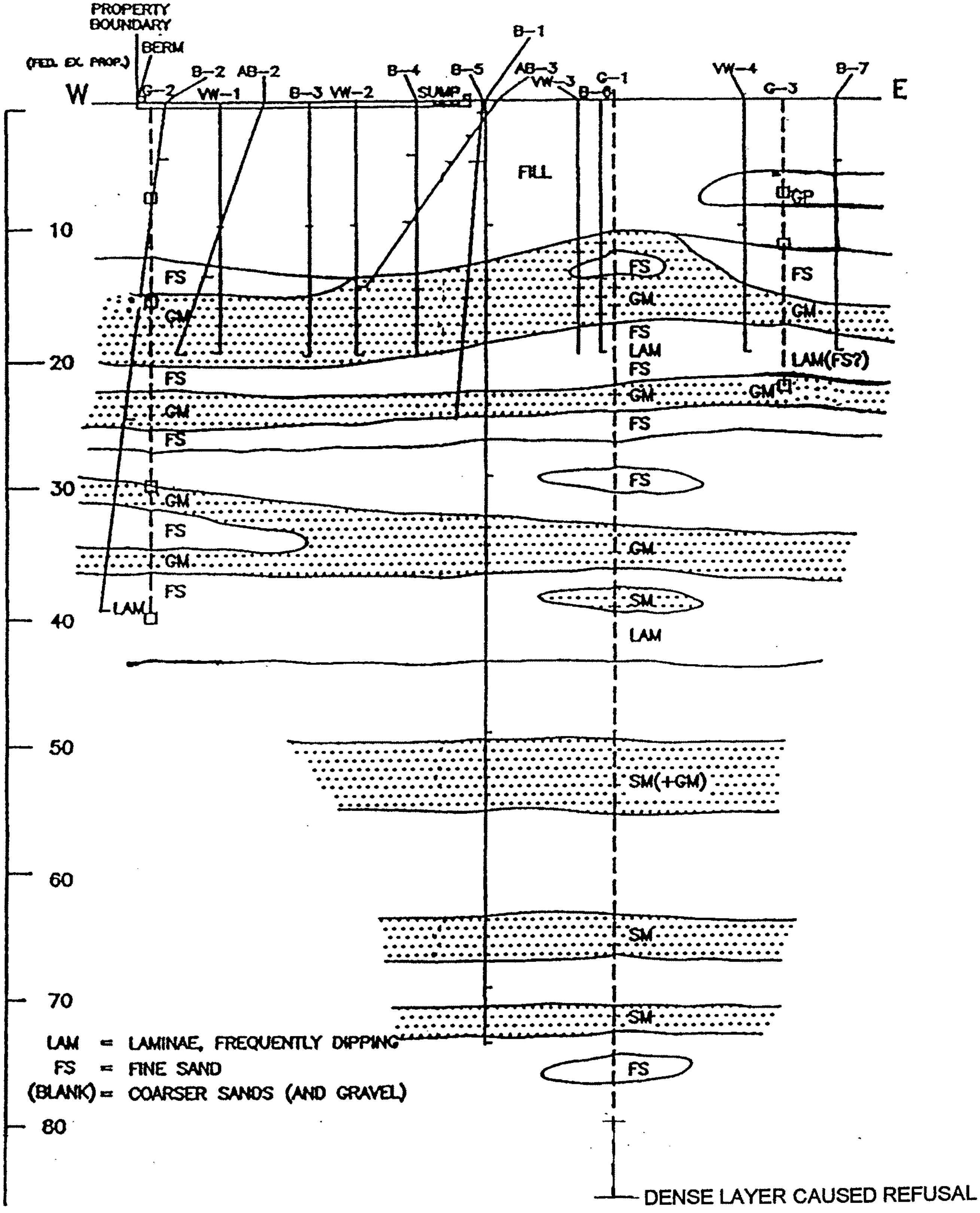
GERAGHTY & MILLER, INC.
Environmental Services

0 10 FT

SOIL GAS PCE DATA

HAWKER PACIFIC INC.
SUN VALLEY, CA

FIGURE
12



GERAGHTY & MILLER, INC.
Environmental Services

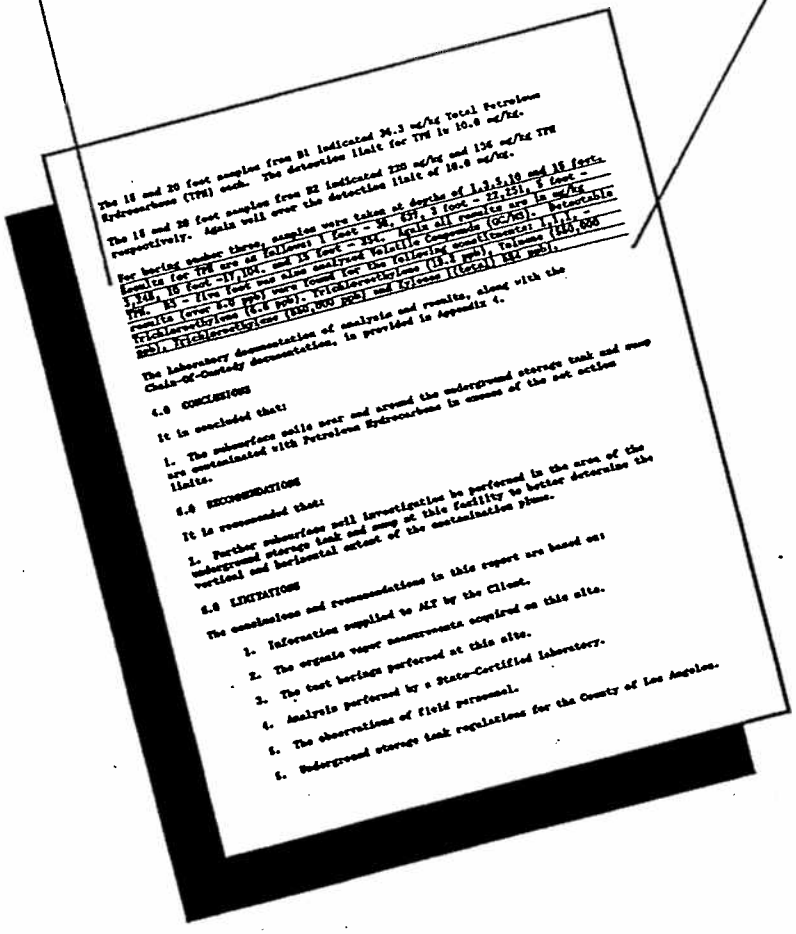
0 10 FT

LITHOLOGIC SECTION

HAWKER PACIFIC INC.
SUN VALLEY, CA

FIGURE 13

For boring number three, samples were taken at depths of 1,3,5,10, and 15 feet. Results for TPH are as follows: 1 foot - 38, 637, 3 foot - 22,251, 5 foot - 3,245, 10 foot - 17,104, and 15 foot - 354. Again all results are in mg/kg TPH. B3 - five foot was also analyzed Volatile Compounds (GC/MS). Detectable results (over 5.0 ppb) were found for the following constituents: 1,1,1, - Trichloroethylene (6.6 ppb), Trichloroethylene (19.2 ppb), Toluene (550,000 ppb), Trichloroethylene (550,000 ppb) and Xylenes [(total) 584 ppb].



The 10 and 20 foot samples from B1 indicated 36.3 mg/kg Total Petroleum Hydrocarbons (TPH) each. The detection limit for TPH is 10.0 mg/kg.

The 10 and 20 foot samples from B2 indicated 220 mg/kg and 136 mg/kg TPH respectively. Again well over the detection limit of 10.0 mg/kg.

For boring number three, samples were taken at depths of 1,3,5,10 and 15 feet. Results for TPH are as follows: 1 foot - 38, 637, 3 foot - 22,251, 5 foot - 3,245, 10 foot -17,104, and 15 foot - 354. Again all results are in mg/kg TPH. B3 - five foot was also analyzed Volatile Compounds (GC/MS). Detectable results (over 5.0 ppb) were found for the following constituents: 1,1,1, - Trichloroethylene (6.6 ppb), Trichloroethylene (19.2 ppb), Toluene (550,000 ppb), Trichloroethylene (550,000 ppb) and Xylenes [(total) 584 ppb].

The laboratory documentation of analysis and results, along with the Chain-Of-Custody documentation, is provided in Appendix C.

4.0 CONCLUSIONS

It is concluded that:

1. The subsurface soils over and around the underground storage tank and sump are contaminated with Petroleum Hydrocarbons in excess of the set action limits.

5.0 RECOMMENDATIONS

It is recommended that:

1. Further subsurface soil investigation be performed in the area of the underground storage tank and sump at this facility to better determine the vertical and horizontal extent of the contamination plume.

6.0 LIMITATIONS

The conclusions and recommendations in this report are based on:

1. Information supplied to ALT by the Client.
2. The organic vapor measurements acquired on this site.
3. The test borings performed at this site.
4. Analysis performed by a State-Certified laboratory.
5. The observations of field personnel.
6. Underground storage tank regulations for the County of Los Angeles.

GERAGHTY & MILLER, INC.
Environmental Services
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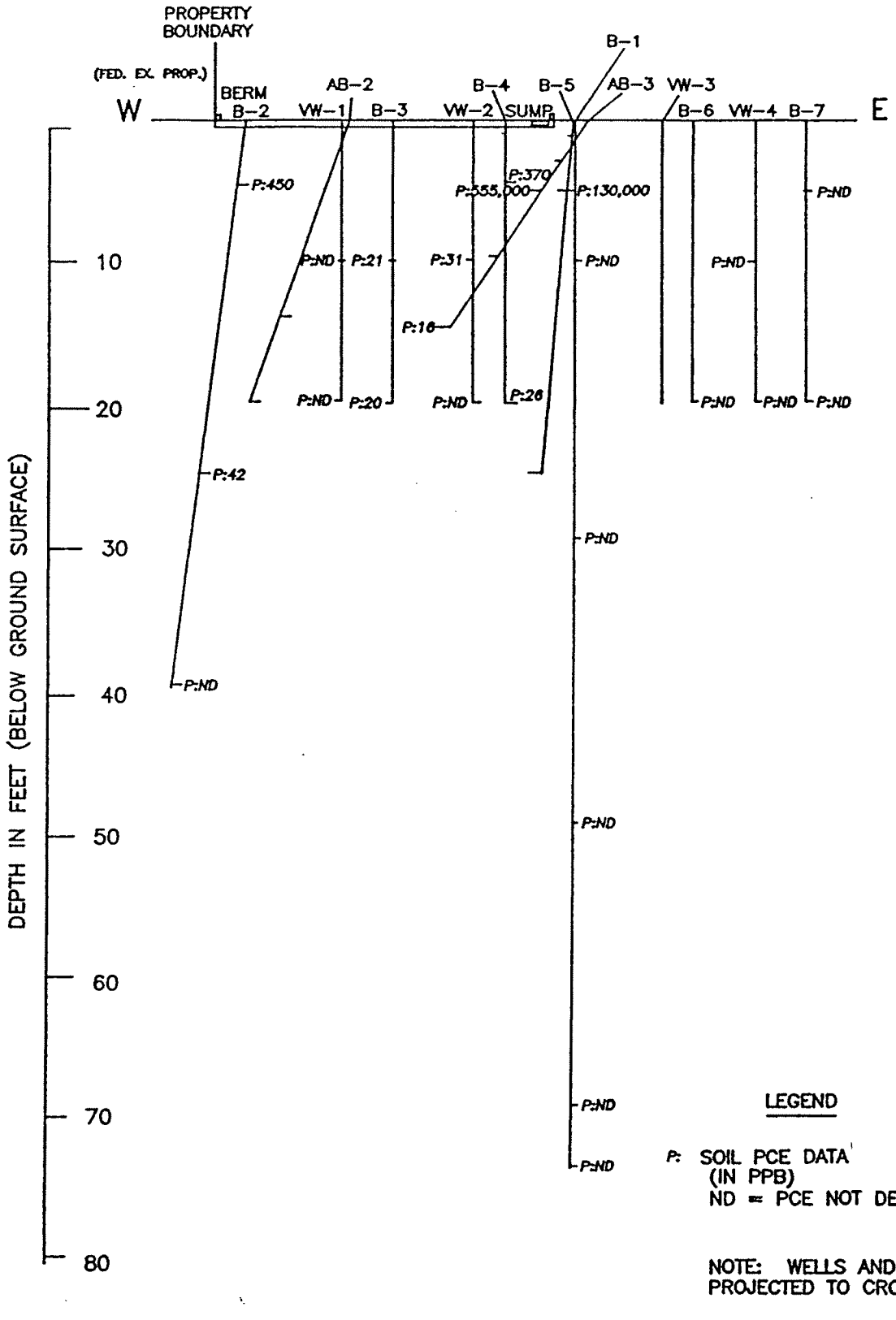
Page from the ALT Report Showing No Mention of PCE in Their Results

FIGURE
14



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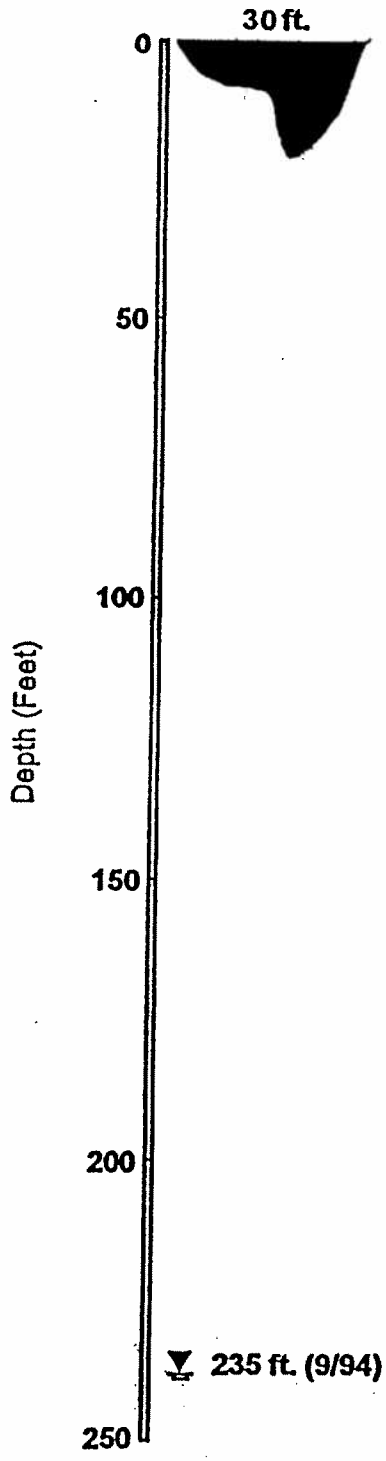
GERAGHTY & MILLER, INC.
Environmental Services

0 10 FT

LAW/CRANDALL SOIL PCE DATA

HAWKER PACIFIC INC.
SUN VALLEY, CA

FIGURE 15



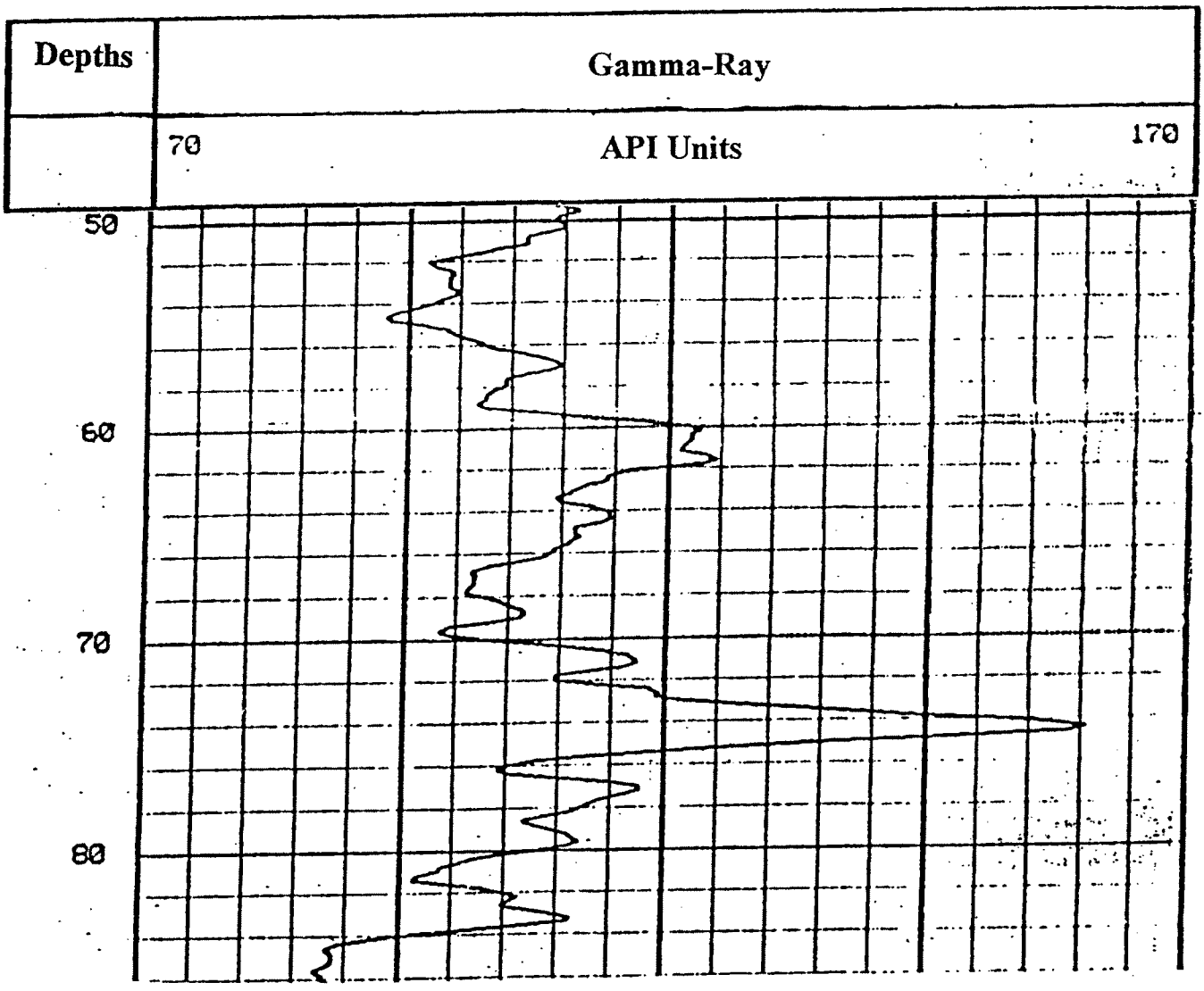
GERAGHTY & MILLER, INC.
Environmental Services
A heidemij company

E-W Cross Section
Showing Estimated PCE Plume
Greater than 50 ppb and
Regional Depth to Groundwater
modified from Law/Crandall

FIGURE
16

Gamma-Ray Log

Well MW-1
Location 11247 Sherman Way



GERAGHTY & MILLER, INC.
Environmental Services
A heidemij company

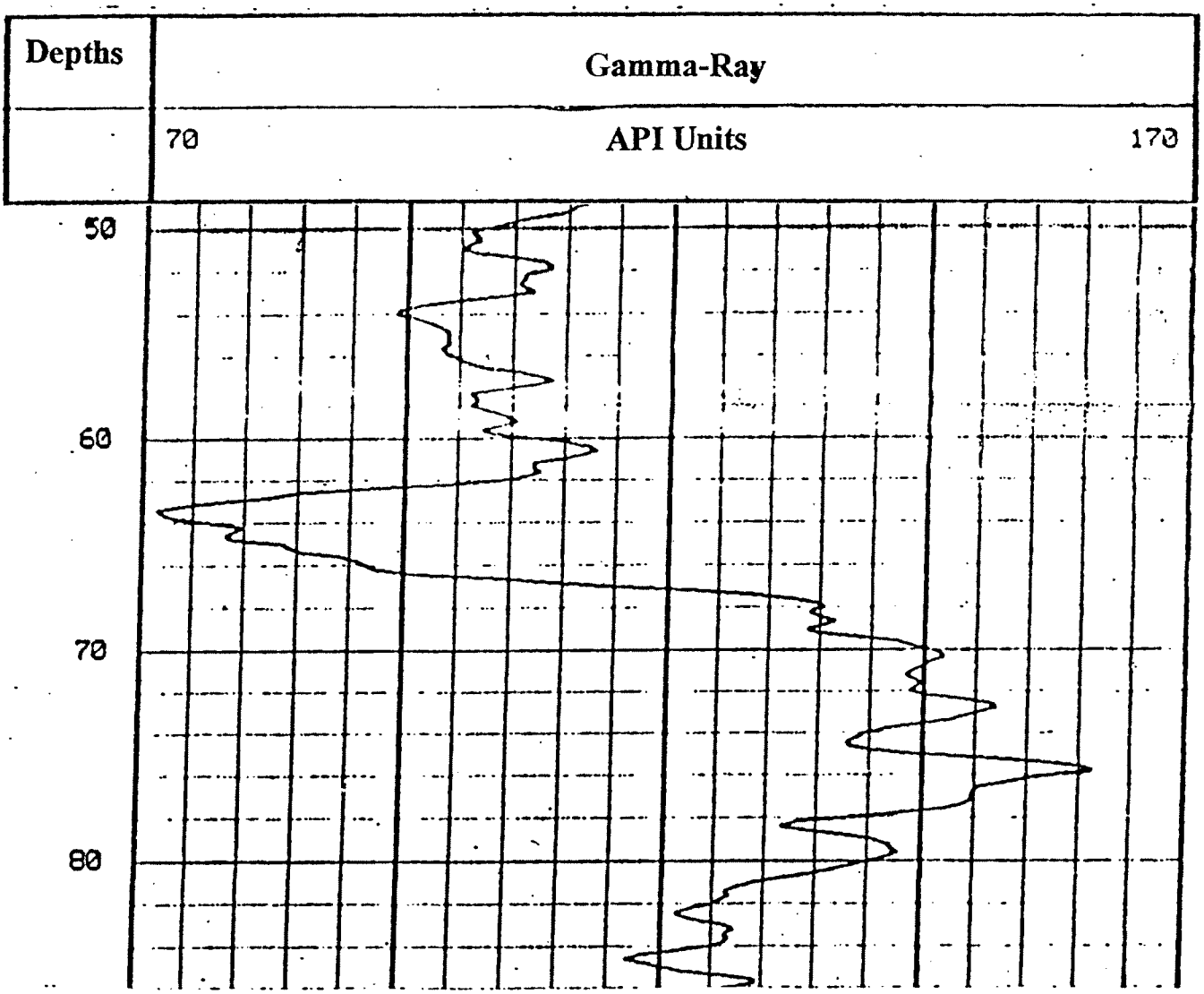
Gama-Ray Log of LAUSD Well MW-1
Showing Fine Textured Lens

modified from Lindmark 1995

FIGURE
17

Gamma-Ray Log

Well MW-3
Location 11247 Sherman Way



GERAGHTY & MILLER, INC.
Environmental Services
A heidemij company

Gama-Ray Log of LAUSD Well MW-3
Showing Fine Textured Lens

modified from Lindmark 1995

FIGURE
18

Exhibit A

Relevant LARWQCB Correspondence

STATE OF CALIFORNIA
GEORGE DEUKMEJIAN, Governor

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD—
LOS ANGELES REGION
101 CENTRE PLAZA DRIVE
MONTEREY PARK, CALIFORNIA 91754-2156
(213) 266-7500

February 21, 1990

Mr. Erik Johnson
HAWKER PACIFIC, INC.
11310 Sherman Way
Sun Valley, CA 91352

SUBSURFACE INVESTIGATION - WELL INVESTIGATION PROGRAM
(FILE NO. AB104.0436)

We have reviewed your consultant's, Law Environmental, Inc., report dated January 11, 1990, containing the results of additional subsurface investigation completed at your facility.

The reported analytical test results show that no volatile organic contaminants have been detected in any of the soil samples obtained from the area of your two private sewage disposal systems onsite. However, Toluene has been detected in the soil sample obtained at 35 ft below land surface in your industrial waste clarifier area. The presence of Toluene is problematic since Toluene was also detected in the laboratory blanks, although at lower levels than in the sample. The concentration of Toluene detected in the sample (4 µg/kg) is relatively low, however, and does not appear to pose a potential threat to ground water quality in the area.

Based on the above results, no further action is required on your part at this time with respect to this Agency's Well Investigation Program.

If you have any questions, please contact Ms. Mila P. Silvestre at (213) 266-7529.

David A. Bacharowski

DAVID A. BACHAROWSKI
Environmental Specialist IV

cc: Alisa Greene, U. S. EPA, Region IX
Bill Jones, L. A. County Dept. of Health Services
Warren Gross, Law Environmental, Inc.